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# MANUAL

OF THE

# FLORA OF JACKSON COUNTY

## MISSOURI

BY

KENNETH K. MACKENZIE

ASSISTED BY

B. F. BUSH AND OTHERS

KANSAS CITY, MO.
1902

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# INTRODUCTION.

SITUATED as it is, where the floras of several different regions blend, Jackson County, Missouri, is of especial interest to the botanist. Fortunately its flora has been studied as thoroughly probably as that of any other western area of similar size. The results of these investigations have appeared from time to time in several local floras. The first of these was entitled "Flora of Jackson County," and was published in 1882 by Mr. B. F. Bush. In 1885 Mr. Bush and Rev. Cameron Mann published a supplement to this flora, and in 1888 Mr. Bush published a second supplement. The species and varieties enumerated in these three lists are numbered consecutively and aggregate 1,004. In 1899 I published a "Spring Flora of Kansas City and Vicinity," which contained a key to the plants blooming before the first of June. This work also added a few species to those already enumerated in the previous works. In addition, a series of very instructive and ably written papers by the Rev. Cameron Mann appeared in the *Kansas City Star* during 1899, dealing with our local flora in a popular manner. To the best of my knowledge nothing else has been printed professing to deal with our local flora alone. A "Flora of Missouri" published in 1885 by Professor Tracy, and a "List of the Trees, Shrubs and Vines of Missouri," published in 1895 by Mr. B. F. Bush complete the list of works in which any Jackson County plants are enumerated.

At the time when the earlier lists were published, there was no work which dealt with the flora of this region. Consequently there was then much difficulty in arriving at a correct understanding of the species represented here and mistakes were inevitable, but considering the difficulties above mentioned they were not numerous, and are most noticeable in genera, which even now are only beginning to be understood.

This work is intended to include all species of the higher plants found growing wild within the limits of Jackson County, and embraces the results of all the botanizing done here up to the present time. All species enumerated in previous works and not included herein are omitted for some good reason, either because their occurrence could not be verified, because of erroneous determinations, or because the forms then regarded as distinct on further study have been proved not to be so. While as much care as possible has been taken to make this work accurate and complete, yet it must be recognized that no manual or flora ever published has entirely met these requirements, and further study and investigation will certainly reveal the necessity for corrections in and additions to this.

While many lists of plants occurring in certain restricted localities have been published, as far as I am aware no manual with full descriptions and keys devoted to but one county and professing to include all the species found in that county has ever been published in the United States. That I have attempted here. The book is intended for the use of students, and has been made as easy and as simple as possible. For that reason no attempt has been made to use natural keys, for such keys are always so full of exceptions as to make them worse than useless to the beginner. Therefore artificial keys have been constructed and used. The results obtained by the use of these keys can in each case be verified by the more enlarged and technical descriptions appearing under the families, genera and species respectively.

It is hardly necessary to dwell upon the manifest advantages possessed by a manual of this character for local use over those which deal with areas embracing many states. Two-thirds or three-fourths of the species described in such works will not be found in any given locality, and the pupil cannot fail to be hindered by the necessity of studying the descriptions of these species in order to differentiate them from those species which actually occur in his vicinity. This, added to the fact that in a local manual the exact locality in which any certain species can be found is given, is sufficient to show the advantages of such a work.

The descriptions here given are in most cases drawn from specimens collected in this county by myself and others. Where that has not been possible specimens collected elsewhere have been resorted to, and in one or two cases published descriptions have been used, specimens of these species not being available. These descriptions have been further compared with those of the standard manuals and are believed to be accurate as applied to the species found here. In describing families and genera the descriptions are applicable only to our own species, and exceptions illustrated by foreign species have been omitted. Save that combinations in which generic and specific name are identical are avoided, the names used, with few exceptions, are those used in Britton's "Manual of the Flora of the Northern States and Canada" and the sequence of families and genera there adopted has been followed. This is largely true of the sequence of species also.

# DESCRIPTION OF JACKSON COUNTY.

JACKSON County, Missouri, is bounded on the north by the Missouri River, separating it from Clay and Ray Counties, Missouri; on the west by Wyandotte and Johnson Counties, Kansas; on the south by Cass County, Missouri; and on the east by Lafayette and Johnson Counties, Missouri. It is about twenty-seven miles long east and west, and from seventeen to twenty-seven miles wide north and south, and contains some six hundred and twenty-five square miles. In altitude it ranges from about 675 feet above sea level near Levasy to 1,100 feet near Lee's Summit. For so limited an area it exhibits a great diversity of surface, and consequently the flora is rich and varied.

As most people are aware, the Missouri River is extremely crooked, first approaching the bluff on one side and then the bluff on the other, thus alternately leaving great bottoms on opposite sides of the river. Of these bottoms there are five principal ones in this county, which are known as the Sheffield, Rush, Little Blue, Sibley and Levasy bottoms. The river is continually cutting into and eating away the up-river sides of these bottoms and adding to the lower sides. The sand and mud deposited on the lower side is at first only uncovered at low water, but being gradually added to is at length never covered save when the river is very high, parts indeed escaping from submergence entirely. In each of the bottoms there is a series of these areas added in successive years, each a little lower than the one next above. The flora of the outer of these areas or sandbars proper is very interesting and peculiar. In places *Salix interior* is so abundant that one can scarcely force his way through, and everywhere it is the predominant plant. In the more open places are found many herbaceous plants occurring no place else. Many species of *Cyperus*, *Potentilla*, *Roripa* and *Eragrostis* abound. *Juncus Richardsonianus*, *Juncus bufonius*, *Juncus Balticus*, *Aristida intermedia*, *Oxygraphis Cymbalaria*, *Sporobolus asperifolius*, *Corispermum hyssopifolium*, *Bergia Texana*, *Fuirena simplex*, *Limosella aquatica* and many other rarities have been found on these sandbars.

Passing from these outer sand-bars inland the flora gradually changes. *Salix interior* is first replaced by *Salix amygdaloides*, *Salix cordata Missouriensis* and *Populus deltoides*, and the herbaceous plants by *Equisetum robustum*, and these in turn give way to the giant elms, oaks and sycamores of the bottom forests. In the more open parts of these forests several species of *Meibomia*, *Sieglingia sclerioides*, *Helianthus tuberosus subcanescens*, *Anemone Canadensis*, *Apocynum hypericifolium*, *Vernonia maxima*, *Solidago serotina*, *Aster Missouriensis*, *Aster paniculatus* and various species of *Bidens* are

characteristic plants, while in the denser forests various vines such as *Ampelopsis cordata*, *Vitis vulpina*, *Falcata Pitcheri*, and *Rhus radicans* make traveling burdensome. In these dense forests occur those rare orchids: *Aplectrum spicatum*, *Gyrostachys plantaginea* and *Pogonia trianthophora*, and keeping them company the fungus-like *Monotropa uniflora* rarely appears.

Bordering these lowlands is a chain of bluffs, high and rocky in the western part of the county, but becoming lower and more sandy in the eastern part. Various creeks, greater or less in extent, break the continuity of this chain, and with their branches make the northern part of the county very uneven. The larger of these creeks are really small rivers, and extending through the width of the county, carry with them the flora peculiar to the broken uneven country. Getting away from the influence of these creeks and their branches one comes to the prairie, once open and nearly treeless, but now through the efforts of man fast losing its characteristic features. This prairie extends throughout the southern, especially the southwestern, part of the county, being there broken only by the larger streams.

The chief streams of the county are the Blue, running through the western part nearly due north and south; the Little Blue, running through the central part from the southwest to the northeast: Sni-a-bar Creek and its tributaries which cover the southeastern part; and Fire-Prairie Creek, which drains the northeastern part. The first three of these are bordered by wooded bluffs, but Fire-Prairie Creek, save for a narrow fringe of timber immediately adjoining it, runs through a nearly treeless bottom. Barely penetrating the southeastern part of the county are a few small wooded creeks ultimately emptying into the Osage and bringing in a few rare herbaceous species.

Along our streams *Salix nigra*, *Acer saccharinum*, *Aesculus glabra arguta*, *Ulmus Americana*, *Ulmus fulva*, *Juglans nigra*, *Quercus macrocarpa* and *Gymnocladus dioica* form the greater part of the forest, while on the bluffs and the uplands various species of oaks and hickories find their home. The sugar-maple is common in the northeastern part and the rock-elm abounds only along the rocky bluffs in the northwestern, but as a whole our trees are not local. The common smaller trees are *Ostrya Virginiana*, *Malus Ioensis* and various species of *Crataegus* and *Prunus*. The buckberry (*Symphoricarpos*) is the most common under-shrub, but the hazelnut (*Corylus Americana*) and the wild blackberry are close rivals, while along rocky branches, especially in the southern part, *Rhamnus lanceolata* is common. Various sumacs and several species of *Cornus* also abound, and twining over the larger plants are various species of wild grapes, true and false; the poison ivy and the wild hop are everywhere met with.

The herbaceous plants as a rule are more locally distributed than the woody, though of course many range almost throughout the county. In

the woods, especially of the northern part of the county, *Circaea Lutetiana*, *Teucrium Canadense*, *Impatiens biflora* and *aurea*, *Claytonia Virginica*, *Isopyrum biternatum*, *Erythronium albidum*, *Viola scabriuscula* and *Viola cuspidata*, *Rudbeckia triloba*, *Eupatorium maculatum*, *Agrimonia mollis*, *Vernonia interior*, *Muhlenbergia diffusa*, various species of *Polygonum* and *Meibomia*, *Podophyllum peltatum*, *Sanicula Canadensis*, and several species of asters and goldenrods may be mentioned as characteristic species.

The Blue and the Little Blue and their tributaries have cut down through the limestone rock prevalent in the western part, and the outcroppings of these limestone rocks, especially abundant in the southwestern part, form our barrens. The limestone is usually covered by a thin layer of rich soil, which is moist in spring, but later on becomes dried out. These barrens are either bare of trees or covered by small scrub and are bounded on one side by the rocky bluffs of the creeks and on the other usually separated from the prairies by the scrub-oak woods. In these barrens many typical prairie plants occur, while other plants appear which are met with in no other place. Of the latter *Ophioglossum Engelmanni*, *Specularia leptocarpa*, *Mentzelia oligosperma*, *Euphorbia Arkansana*, *Sedum pulchellum*, *Valerianella stenocarpa*, *Chaerophyllum Texanum* and *Bouteloua curtipendula* may be mentioned. The rocky woods adjoining these barrens are chiefly remarkable for the vast number of individuals of some species which they contain. Here *Ratibida pinnata*, *Cassia Chamaecrista* and *Helianthus hirsutus* often give a yellow appearance to the landscape. It is in these barrens and the woods adjoining that many species of asters and goldenrods find their home.

The prairie region may be roughly divided into the high and the low prairies. Unfortunately for the botanist the high prairie is so fertile and easy of cultivation that very little of it now remains in its natural state, the best being found in the Missouri Pacific right of way, both north and south of Lee's Summit. Typical prairie plants are *Brauneria pallida*, *Lacinaria pycnostachya*, *Viola delphinifolia*, *Rudbeckia subtomentosa*, *Meibomia Illinoensis*, several species of *Silphium* and *Helianthus*, *Petalostemon candidus*, *Petalostemon purpureus*, *Andropogon furcatus*, *Andropogon scoparius*, *Tripsacum dactyloides*, *Erythronium mesachoreum*, *Allium mutabile* and *Tradescantia reflexa*. Great rarities are *Polygala incarnata* and *Dodecatheon Meadia*.

The low prairie region is chiefly found along Fire Prairie Creek, along portions of the Little Blue, and sparingly along the Blue. Here *Vernonia fasciculata*, *Spartina cynosuroides*, *Rosa setigera*, *Asclepias Sullivantii*, *Koellia flexuosa* and many species of sedges abound.

Besides these main subdivisions there are several localities of especial interest. Thus in the Sni-a-bar Creek region, *Polemonium reptans* is very abundant. In the northeastern part of the county *Iva ciliata* abounds, and in the southwestern, *Helianthus orgyalis*. About four miles southeast of Grain Valley, there are some sandy woods where *Zizia cordata*, *Stenophyllus capillaris*, *Aristida gracilis*, *Lechea tenuifolia* and *Centunculus minimus*

occur. Coming up from the south at Greenwood are *Gerardia Skinneriana*, *Talinum calycinum* and *Fimbristylis laxa*. *Tragia ramosa*, *Aristida basiramea* and *Thaspium barbinode* get as far north as Martin City, while *Draba cuneifolia* seems to reach its northern limit at Dodson.

But the most interesting of all is the bog region found along the Missouri bluffs west of Sibley. Many eastern plants rare in the west, are here found. *Naumburgia thyrsiflora*, *Epilobium lineare*, *Epilobium coloratum*, *Dryopteris Thelypteris*, *Polygonum sagittatum*, *Dulichium arundinaceum*, *Carex hystricina*, *Carex lurida*, *Carex typhinoides* and *Cardamine Pennsylvanica* may be mentioned. In the rich woods adjoining, *Asplenium Filix-fœmina*, *Botrychium obliquum*, *Osmunda Claytoniana*, *Hydrastis Canadensis*, *Caulophyllum thalictroides* and *Korycarpus diandras* occur, but often almost hidden by the luxurious growth of *Asplenium angustifolium*.

In the very rich bluffs at Courtney, *Carex Albursina* and *Bikukula Canadensis* may be found, while on the rocks *Asplenium platyneuron* and *Asplenium parvulum* may perchance reward the very diligent searcher. On the rocky bluffs at Kansas City, *Polymnia Canadensis radiata* abounds, although found in no other station in the county, and *Thalictrum dioicum* has the same local distribution on the rocky bluff north of Fairmount Park.

Aquatics are not common with us, but still we have a fair share. We have four good sized ponds, one at Lake City, another at Sheffield, a third at Atherton called Hiffner's Lake, and a fourth at Sibley known as Fish Lake. Chief among our water-plants found in these lakes is the chinquapin water-lily, unfortunately confined to Lake City and Fish Lake. Less noticeable, but perhaps more interesting are the Utricularias, Potamogetons, *Myriophyllum*, *Ceratophyllum*, *Ranunculus*, *Didiplis*, *Monniera*, *Lemna*, *Spirodela*, *Azolla*, Heterantheras and Sagittarias, some found in but one or a few, others in all our ponds.

With such a large city and important railroad center within its borders as Kansas City, one would naturally expect to find many foreign plants in Jackson County, and this expectation is amply borne out. Some of the introduced plants are among our most common weeds, while of others but a few clumps have been found. Although not weeds, clover (*Trifolium repens*) and blue-grass (*Poa pratensis*) are perhaps the most common of our introduced plants. In fact it is hard to believe that they are introduced. Of the introduced plants which have become common weeds, *Panicum Crus-Galli*, *Syntherisma sanguinalis*, *Chætochloa glauca* and *Chætochloa viridis*, *Agrostis alba*, *Eleusine Indica*, *Eragrostis major*, *Festuca elatior*, *Bromus secalinus*, *Rumex crispus*, *Chenopodium ambrosioides*, *Chenopodium album*, *Amaranthus retroflexus*, *Brassica nigra*, *Bursa Bursa-pastoris*, *Sisymbrium officinale*, *Pastinaca sativa*, *Ipomœa purpurea*, *Ipomœa hederacea*, *Verbascum Thapsus*, *Xanthium strumarium*, *Helianthus annuus*, *Anthemis Cotula*, *Carduus lanceolata*, *Taraxacum officinale*, *Lactuca virosa* and *Sonchus asper*, are met with everywhere, and are some of our commonest plants. Many native plants have taken on a weedy aspect, and with the

introduced species above mentioned abound in waste places. Chief among these are: *Panicum capillare*, *Panicum proliferum*, *Juncus tenuis*, *Urtica gracilis*, *Polygonum aviculare*, *Polygonum Pennsylvanicum*, *Phytolacca decandra*, *Portulaca neglecta*, *Lepidium apetalum*, *Lepidium Virginicum* (possibly introduced), *Euphorbia maculata*, *Euphorbia nutans*, *Asclepias Syriaca*, *Verbena stricta*, *Teucrium Canadense*, *Solanum Carolinense*, *Veronica peregrina*, *Plantago Rugellii*, *Plantago aristata*, *Vernonia interior*, *Erigeron annuus*, *Erigeron ramosus*, *Leptilon Canadense*, *Iva ciliata* (locally), *Ambrosia artemisiaefolia*, *Ambrosia trifida*, *Carduus altissimus* and *Lactuca Canadensis*.

Along the railroads many species are found, of some perhaps only a plant or two, which hardly deserve a place in our flora, but whose occurrence it is necessary to mention in order to make a complete record. The railroads at Sheffield are especially rich in such species. A few show a tendency to persist and spread, but most of them are purely waifs. Quite a number of such species are here reported, especially among the Gramineae and Compositae.

At the end of the work will be found a table showing the number of families, genera, species and varieties, from which a knowledge of the component parts of our flora can be obtained almost at a glance. Our largest genera with the number of species and varieties in each are: *Carex*, 60; *Polygonum*, 20; *Panicum*, 17; *Aster*, 16; *Cyperus*, 13; *Chenopodium*, 12; *Meibomia*, 12; *Solidago*, 12; *Quercus*, 11; *Euphorbia*, 11; *Physalis*, 10; *Helianthus*, 10. Probably the most noticeable features of our flora are the great number of grasses, Compositae and sedges, the total absence of heaths and the small number of ferns and orchids.

## USE OF KEYS.

To those not acquainted with the use of botanical keys, a few hints may be of value. Suppose we have gone into the woods and found a plant whose name we would like to ascertain. We first turn to the key to the families at the beginning of the book and find there two lines *beginning equally far out.* We must choose between these two lines, one of which says "plants without flowers or seeds" and the other "plants with flowers and seeds." We perceive that our plant has both flowers and seeds and so select the second division. Under this, but a little indented, are two lines beginning equally far out. Our plant agrees with the second under which, again, are two lines to select from and again we take the second line. Here we are referred to "II" Glancing down the page, this figure soon meets the eye. In the same manner as before we proceed to select "B," and going on as before we at last find that our plant belongs to the Portulacaceae found on page 85. Turning to page 85 we compare our plant with the family description, and then if all is correct take up the key to the genera. Out of the three genera No. 2 or *Claytonia* agrees with our plant. Turning to No. 2, we read generic and specific description, and, finding that both descriptions agree, conclude that our plant is *Claytonia Virginica* or Spring Beauty. By a similar use of the keys scattered through the work—but always commencing with the family key—any plant occurring with us may be traced and named. If a genus has more than one species represented, the key at the beginning of the genus must be used to name the species.

## NEW SPECIES, VARIETIES AND NAMES.

The authors feel that quite a few of the genera and families recognized in this work could be split up with great advantage to the student and to a proper understanding of systematic botany, but they think that work of this character should be left to a book of a more extended scope than this, and so have not attempted it here. Likewise there are several forms of plants growing in our territory, which we have not named, owing to insufficient knowledge of them at present. Some of our plants we thought deserved recognition and these we have indicated as new.

A list of the new species, varieties and names given in this work is as follows, the authors being Mackenzie and Bush, except as otherwise indicated :

1. *Pellaea atropurpurea Bushii* Mackenzie, p. 5.
2. *Echinodorus cordifolius lanceolatus* (Engelm.), p. 10.
3. *Muhlenbergia polystachya*, p. 23.
4. *Hystrix elymoides*, p. 39.
5. *Iris foliosa*, p. 63.

6. *Salix cordata Missouriensis* (Bebb), p. 69.
7. *Chenopodium album Berlandieri* (Moq.), p. 80.
8. *Portulaca neglecta*, p 86.
9. *Crataegus Mackenzii* Sarg., p. 108.
10. *Prunus lanata* (Sudw.), p. 109.
11. *Lespedeza Manniana*, p. 118.
12. *Lespedeza acuticarpa*, p. 118.
13. *Lespedeza violacea prairea*, p. 118.
14. *Oenothera strigosa* (Rydb.), p. 139.
15. *Convolvulus sepium fraterniflorus*, p. 153.
16. *Physalis Missouriensis*, p. 167.
17. *Physalis subglabrata*, p. 167.
18. *Lobelia spicata leptostachys* (A. DC), p. 183.
19. *Vernonia interior Drummondii* (Shuttlw.), p. 190.
20. *Vernonia interior Baldwinii* (Torr.), p. 191.
21. *Solidago longipetiolata*, p. 194.
22. *Aster parviceps* (Burgess), p. 196.

Descriptions of the species of *Lespedeza* indicated as new appeared in "Transactions of the Academy of Science of St. Louis," Vol. XII., No. 2, issued March 19, 1902, and descriptions of several other species here indicated as new were published in Vol. XII., No. 7, of the same Transactions after the portion of this work containing these species had been printed.

## ACKNOWLEDGMENTS.

In closing this work I wish to acknowledge my indebtedness to several gentlemen without whose assistance it would not have been possible in its present form. I have had the benefit of all of Mr. B. F. Bush's and Rev. Cameron Mann's notes and observations made in this county and extending over the last twenty years, as well as of the large botanical knowledge possessed by both these gentlemen. Quite a number of the species included herein rest solely on their authority, as do also a large number of the localities given for other species. Mr. Bush's assistance has been so great that it is but his due to associate his name with the authorship of this work. This has accordingly been done. Many others, especially Mr. William Nelson, of the Kansas City *Star*, have taken an active interest in the publication of this work and to these my hearty thanks are hereby extended. Thanks are further due to distinguished botanists throughout the United States who have on many occasions named plants sent to them both by myself and by Mr. Bush. I wish also to especially thank Professor N. L. Britton and his assistants in charge of the New York Botanical Garden for the use of the facilities afforded by that institution, and for assistance in many difficult genera.

Kenneth K. Mackenzie.

Kansas City, Missouri,
June 10, 1902.

## SYMBOLS USED.

The degree mark (°) is used after figures to indicate feet.

The minute mark (′) is used after figures to indicate inches.

The second mark (″) is used after figures to indicate lines, or twelfths of an inch.

# KEY TO THE FAMILIES.

Plants without flowers or seeds, but with spores which are borne in sporanges.
  Plants not aquatic and leaves not linear and basal.
    Sporanges in terminal spikes or panicles or on the back of a leaf.
      Fronds erect in vernation. — OPHIOGLOSSACEAE, 1.
      Fronds circinate in vernation.
        Sporanges opening vertically. — OSMUNDACEAE, 2.
        Sporanges opening transversely — POLYPODIACEAE, 2.
    Sporanges beneath scales in a terminal spike. — EQUISETACEAE, 6.
  Plants small floating aquatics. — SALVINIACEAE, 5.
  Plants with the leaves all linear and basal. — ISOETACEAE, 6.
Plants with flowers and seeds.
  Ovules naked. — PINACEAE, 7.
  Ovules enclosed in an ovary.
    Seed with one cotyledon ; stems not differentiated into pith, wood and bark ; leaves usually parallel-veined. — I.
    Seeds with two cotyledons ; stems differentiated into pith, wood and bark ; leaves usually netted-veined. — II.

## I.

Carpels one or more, distinct.
  Plants with true leaves.
    Perianth of bristles or scales.
      Flowers in terminal spikes. — TYPHACEAE, 7.
      Flowers in terminal round heads. — SPARGANIACEAE, 8.
    Perianth corolla-like.
      Leaves with parallel veins.
        Carpels one–four. — NAIADACEAE, 8.
        Carpels numerous. — ALISMACEAE, 9.
      Leaves with netted veins. — ARACEAE, 54.
    Perianth none ; flowers in the axils of chaffy scales.
      Glumes one for each flower ; fruit an achene ; stems solid. — CYPERACEAE, 39.
      Glumes two for each flower ; fruit a grain ; stems usually hollow. — GRAMINEAE, 11.
    Perianth none ; flowers not in the axils of chaffy scales. — ARACEAE, 54.
  Minute floating plants with no leaves. — LEMNACEAE, 54.
Carpels united into a compound ovary.
  Ovary superior.
    Perianth segments all green.
      Herbs. — JUNCACEAE, 57.
      Climbing vines. — SMILACEAE, 62.

Outer perianth segments green ; inner colored.
Petals ephemeral. — COMMELINACEAE, 55.
Petals withering-persistent. — CONVALLARIACEAE, 61.
Perianth segments all colored.
Flowers irregular or perfect ; stamens only three. — PONTEDERIACEAE, 56.
Flowers regular ; stamens six.
Flowers not perfect. — MELANTHACEAE, 58.
Flowers perfect.
Fruit a capsule. — LILIACEAE, 58.
Fruit a berry. — CONVALLARIACEAE, 61.
Ovary inferior.
Aquatic herbs. — VALLISNERIACEAE, 11.
Not aquatics ; flowers regular.
Stamens six ; herbs. — AMARYLLIDACEAE, 62.
Stamens six ; vines. — DIOSCOREACEAE, 63.
Stamens three. — IRIDACEAE, 63.
Not aquatics ; flowers irregular. — ORCHIDACEAE, 64.

II.

Petals if present not united.
Petals none. — A.
Petals present. — B.
Petals present, more or less united. — C.

A.

Aquatic herbs.
Leaves whorled, dissected. — CERATOPHYLLACEAE, 89.
Leaves opposite, entire. — CALLITRICHACEAE, 126.
Trees or shrubs.
Some of the flowers in aments.
Leaves odd-pinnate. — JUGLANDACEAE, 66.
Leaves simple.
Calyx none. — SALICACEAE, 67.
Calyx present.
Pistillate flowers in aments or capitate.
Fruit a nut. — BETULACEAE, 69.
Fruit berry-like. — MORACEAE, 72.
Pistillate flowers not in aments and not capitate. — FAGACEAE, 70.
Flowers not in aments.
Leaves pinnate ; plants prickly. — RUTACEAE, 122.
Leaves pinnate ; plants not prickly.
Stamens usually two. — OLEACEAE, 148.
Stamens four–twelve. — ACERACEAE, 128.
Leaves not pinnate.
Leaves opposite. — ACERACEAE, 128.
Leaves alternate ; sap not milky. — ULMACEAE, 71.
Leaves alternate ; sap milky. — MORACEAE, 72.
Herbs or vines.
Ovary inferior.
Ovary 1-celled. — SANTALACEAE, 74.
Ovary 4-celled. — ONAGRACEAE, 138.
Ovary 6-celled. — ARISTOLOCHIACEAE, 75.

Ovary superior.
Ovaries many. — RANUNCULACEAE, 90.
Ovary one, 10-celled, 10-ovuled. — PHYTOLACCACEAE, 84.
Ovary one, 5-celled, 5-horned. — CRASSULACEAE, 102.
Ovary one, 4-celled, 4-ovuled. — CALLITRICHACEAE, 126.
Ovary one, 3-celled, 3-ovuled. — EUPHORBIACEAE, 122.
Ovary one, 2–several-celled, many-ovuled.
Leaves verticillate. — AIZOACEAE, 85.
Leaves not verticillate. — LYTHRACEAE, 136.
Ovary one, 1-celled, many-ovuled. — CARYOPHYLLACEAE, 86.
Ovary one, 1-ovuled.
Vines or herbs with compound leaves. — MORACEAE, 72.
Herbs with simple leaves and sheathing stipules. — POLYGONACEAE, 75.
Herbs with simple leaves; stipules not sheathing.
Several flowers together and surrounded by a 5-lobed bract. — NYCTAGINACEAE, 84.
Flowers surrounded by scarious bracts. — AMARANTHACEAE, 82.
Bracts if present not scarious.
Style and stigma one; flowers not perfect. — URTICACEAE, 73.
Styles or stigmas two–three.
Leaves alternate. — CHENOPODIACEAE, 79.
Leaves opposite. — CARYOPHYLLACEAE, 86.

B.

Ovary superior. — 1.
Ovary inferior. — 2.

1.

Corolla irregular.
Stamens more than ten. — RANUNCULACEAE, 90.
Stamens ten or less.
Ovary one-celled and with one parietal placenta.
Upper petal enclosed by the lateral in the bud. — CAESALPINIACEAE, 110.
Lateral petals enclosed by the upper in the bud. — PAPILIONACEAE, 111.
Ovary 1-celled and with two parietal placentae. — PAPAVERACEAE, 95.
Ovary 1-celled and with three parietal placentae. — VIOLACEAE, 134.
Ovary 2-celled, 2-ovuled. — POLYGALACEAE, 122.
Ovary 2-celled, several-ovuled.
Leaves simple. — LYTHRACEAE, 136.
Leaves pinnate. — PAPILIONACEAE, 111.
Ovary 3-celled, 6-ovuled. — HIPPOCASTANACEAE, 128.
Ovary 5-celled, several-ovuled. — BALSAMINACEAE, 129.
Corolla regular.
Stamens more than ten and more than twice the divisions of the corolla.
Pistils few–many.
Imbedded in pits in the receptacle. — NYMPHAEACEAE, 89.
On the receptacle.
Stamens on the receptacle.

Small trees. ANONACEAE, 90.
Herbs or vines. RANUNCULACEAE, 90.
Stamens on the calyx. ROSACEAE, 104.
Pistil one.
Vines. MENISPERMACEAE, 95.
Trees.
Stamens not in clusters. DRUPACEAE, 109.
Stamens in clusters. TILIACEAE, 131.
Herbs with black-dotted leaves. HYPERICACEAE, 133.
Herbs with dotless leaves.
Ovary 3-celled. EUPHORBIACEAE, 122.
Ovary 5–many-celled. MALVACEAE, 131.
Ovary 1-celled, with parietal placentae.
With one parietal placenta.
Fruit not pulpy. RANUNCULACEAE, 90.
Fruit pulpy. BERBERIDACEAE, 94.
With more than one parietal placenta.
Sepals two or three. PAPAVERACEAE, 95.
Sepals four. CAPPARIDACEAE, 102.
Sepals five. CISTACEAE, 134.
Ovary 1-celled ; placenta central. PORTULACACEAE, 85.
Stamens ten or less, or if more, never more than twice as many as the divisions of the corolla.
Ovary or ovaries not compound.
Ovules on a free central placenta.
Sepals two. PORTULACACEAE, 85.
Sepals four or five.
Stamens not opposite the petals. CARYOPHYLLACEAE, 86.
Stamens opposite the petals. PRIMULACEAE, 146.
Ovules not on a free central placenta.
Trees with angulately lobed leaves. PLATANACEAE, 103.
Trees with compound leaves. CAESALPINIACEAE, 110.
Herbs.
Stamens on the receptacle.
Anthers not opening by valves. RANUNCULACEAE, 90.
Anthers opening by valves. BERBERIDACEAE, 94.
Stamens on the calyx.
Ovaries more than one.
Plants fleshy. CRASSULACEAE, 102.
Plants not fleshy. ROSACEAE, 104.
Ovary one.
Flowers in globular heads. MIMOSACEAE, 110.
Flowers not in heads. CAESALPINIACEAE, 110.
Ovary compound as shown by the number of cells, placentae or styles.
Woody plants.
Stamens ten. SIMARUBACEAE, 122.
Stamens four or five, alternate with the petals.
Leaves simple. CELASTRACEAE, 127.
Leaves compound.
Fruit bladdery-inflated. STAPHYLEACEAE, 127.
Fruit a small drupe. ANACARDIACEAE, 126.
Stamens four or five, opposite the petals.

| | |
|---|---|
| Climbing vines. | VITACEAE, 130. |
| Shrubs. | RHAMNACEAE, 129. |
| Herbs. | |
| Ovary 1-celled, with a free central placenta. | CARYOPHYLLACEAE, 86. |
| Ovary 1-celled, with two parietal placentae. | CAPPARIDACEAE, 102. |
| Ovary 1-celled with three parietal placentae. | HYPERICACEAE, 133. |
| Ovary 2-celled, with two parietal placentae. | |
| Capsule not beaked. | CRUCIFERAE, 96. |
| Capsule strongly two-beaked. | SAXIFRAGACEAE, 103. |
| Ovary 2–10-celled. | |
| Leaves palmately compound. | GERANIACEAE, 120. |
| Leaves 3-foliolate. | OXALIDACEAE, 120. |
| Leaves pinnately compound. | ZYGOPHYLLACEAE, 121. |
| Leaves simple. | |
| Ovary 3-celled, 3-ovuled. | EUPHORBIACEAE, 122. |
| Ovary 2–4-celled, many-ovuled. | |
| Stamens two or three. | ELATINACEAE, 133. |
| Stamens four or more. | LYTHRACEAE, 136. |
| Ovary 4–10-celled. | |
| Capsule 5-beaked. | CRASSULACEAE, 102. |
| Capsule not beaked. | LINACEAE, 121. |

2.

| | |
|---|---|
| Woody plants. | |
| Style one. | CORNACEAE, 145. |
| Styles two or more. | |
| Fruit 1-celled, many-ovuled. | GROSSULARIACEAE, 103. |
| Fruit 1–5-celled, with 1–2 ovules in each cell. | POMACEAE, 107. |
| Herbs. | |
| Stems flat, jointed, very prickly. | CACTACEAE, 136. |
| Stems not flat, jointed and prickly. | |
| Climbing vines. | CUCURBITACEAE, 188. |
| Not climbing. | |
| Stamens very numerous. | LOASACEAE, 136. |
| Stamens 12 or fewer. | |
| Ovary several–many-ovuled. | |
| Aquatic herbs with submerged leaves dissected. | HALORAGIDACEAE, 140. |
| Not aquatic herbs with submerged leaves dissected. | |
| Calyx tube adherent to base of ovary. | LYTHRACEAE, 135. |
| Calyx tube adherent to ovary. | ONAGRACEAE, 138. |
| Ovary 2–5-ovuled. | |
| Fruit dry. | UMBELLIFERAE, 141. |
| Fruit berry-like. | ARALIACEAE, 141. |

C.

| | |
|---|---|
| Ovary superior. | 1. |
| Ovary inferior. | 2 |

1.

Corolla irregular.
- Ovary 1-celled.
  - Stamens six, diadelphous. — PAPAVERACEAE, 95.
  - Stamens ten. — PAPILIONACEAE, 111.
  - Stamens two to four.
    - Aquatics. — LENTIBULARIACEAE, 174.
    - Leafless herbs. — OROBANCHACEAE, 174.
    - Leafy herbs. — MARTYNIACEAE, 175.
  - Ovary 2-celled, 2-seeded. — VERBENACEAE, 158.
  - Ovary 2-celled, four–many-seeded.
    - Stamens six or eight. — POLYGALACEAE, 122.
    - Stamens two, four or five.
      - Woody plants. — BIGNONIACEAE, 175.
      - Herbs.
        - Seeds borne on hook-like projections. — ACANTHACEAE, 176.
        - Seeds not borne on hook-like projections. — SCROPHULARIACEAE, 169.
  - Ovary 4-celled or deeply 4-parted.
    - Stamens five. — BORAGINACEAE, 156.
    - Stamens two or four.
      - Ovary four-celled. — VERBENACEAE, 158.
      - Ovary deeply four-lobed. — LABIATAE, 159.

Corolla regular.
- Herbs.
  - Ovaries two, distinct.
    - Pollen simple. — APOCYNACEAE, 149.
    - Pollen united into waxy masses. — ASCLEPIADACEAE, 150.
  - Ovary deeply 4-lobed around a common style.
    - Stamens five. — BORAGINACEAE, 156.
    - Stamens two or four. — LABIATAE, 159.
  - Ovary 4-celled, 4-ovuled. — VERBENACEAE, 158.
  - Ovary 5-celled.
    - Leafless saprophytes. — MONOTROPACEAE, 145.
    - Plants with trifoliolate leaves. — OXALIDACEAE, 120.
  - Ovary 1-celled ; style and stigmas one.
    - With one parietal placenta. — MIMOSACEAE, 110.
    - With a central placenta. — PRIMULACEAE, 146.
  - Ovary 1-celled ; stigma 2-lobed.
    - Ovules many.
      - Leaves opposite ; plants glabrous. — GENTIANACEAE, 148.
      - Leaves opposite ; plants not glabrous. — MARTYNIACEAE, 175.
      - Leaves alternate, deeply-lobed. — HYDROPHYLLACEAE, 155.
    - Ovule one. — PHRYMACEAE, 176.
  - Ovary 3-celled. — POLEMONIACEAE, 154.
  - Ovary 2-celled.
    - Leafless parasitic vines. — CUSCUTACEAE, 153.
    - Herbaceous vines. — CONVOLVULACEAE, 152.
    - Ordinary herbs.
      - Corolla scarious. — PLANTAGINACEAE, 177.
      - Corolla not scarious.
        - Ovules borne on hooks. — ACANTHACEAE, 176.
        - Ovules not borne on hooks.
          - Fruit a berry or prickly capsule. — SOLANACEAE, 166.
          - Fruit a capsule. — SCROPHULARIACEAE, 169.

Woody plants.
Ovary 4–several-celled ; fruit a berry. EBENACEAE,
Ovary 2-celled ; fruit a capsule. BIGNONIACEAE, 175.

2.

Flowers not in involucrate heads.
Stamens fewer than the corolla lobes. VALERIANACEAE, 181.
Stamens as many as or more than the lobes of the corolla.
Herbaceous vines. CUCURBITACEAE, 181.
Herbs or woody plants.
Leaves alternate. CAMPANULACEAE, 182.
Leaves opposite or whorled.
Fruit dry. RUBIACEAE, 178.
Fruit fleshy. CAPRIFOLIACEAE, 179.
Flowers in involucrate heads.
Flowers all ligulate. CICHORIACEAE, 183.
Flowers not all ligulate.
Stamens distinct.
Flowers greenish. AMBROSIACEAE, 186.
Flowers white. COMPOSITAE (*Kuhnia*), 188.
Stamens united by their anthers. COMPOSITAE, 188.

# Flora

of

# Jackson County, Missouri.

## Subkingdom PTERIDOPHYTA.

Spore-bearing plants containing woody tissue. Spore on germination forming a flat green body (prothallus), on which are borne the sexual organs, the antherids producing spermatozoids, and the archegones oöspheres. From the fertilization of the latter by the former the spore-bearing stage is developed.

### Family 1. OPHIOGLOSSACEAE Presl.

Sterile and fertile portions of frond dissimilar, erect in vernation. Sporangia in spikes or panicles, opening by a transverse slit. Spores numerous.

Sterile portion of frond entire. 1. Ophioglossum.
Sterile portion of frond divided. 2. Botrychium.

### 1. OPHIOGLOSSUM L.

Low plants from fleshy rootstocks. Sporangia coherent in two ranks on edge of simple spike-like fertile portion of frond. Sterile portion leaf-like, with numerous anastomosing veinlets.

**1. O. Engelmanni** Prantl. Adder's-tongue. Rootstock deep-seated: sterile segment ovate to elliptic-oblong, mucronate, 2′–3′ long: fertile segment about 1′ long, borne on a stalk 2′–4′ long.—In large colonies in thin soil on limestone ledges throughout the southern portion. June, July.

### 2. BOTRYCHIUM Sw.

Fertile portion of frond panicled. Sporangia separate and distinct. Sterile portion much divided, fern-like.

Sterile frond thin; the ultimate segments cut-toothed at apex. 1. *B. Virginianum.*
Sterile frond thick; the ultimate segments denticulate. 2. *B. obliquum.*

**1. B. Virginianum** (L.) Sw. Rattle-snake Fern. Fronds 6′–3° high: sterile segment sessile, borne above the middle of the plant, triangular in outline, ternate, with divisions once to twice pinnatifid.—Rather frequent in rich woods throughout. May, June.

**2. B. obliquum** Muhl. GRAPE FERN. 8′–12′ high: roots very fleshy: sterile portion of frond long-stalked from near base of plant, ternate: primary segments once or twice pinnatifid: ultimate segments stalked, obliquely lanceolate.—Five plants in rich woods along the base of the Missouri River bluffs in two stations near Sibley. Fall.

## FAMILY 2. OSMUNDACEAE R. Br.

Differs from POLYPODIACEAE in the sporangia having no elastic ring or very slight traces of one. Sterile and fertile portions of frond very dissimilar. Fertile pinnae much contracted, bearing the sporangia on the margins of the narrow segments.

### 1. OSMUNDA L.

Tall ferns growing in large clumps from thick rootstocks.

**1. O. Claytoniana** L. FLOWERING FERN. Fronds 2°–4° high, fertile in the middle; fertile pinnae 2–5 pairs, brownish at maturity, soon withering away: sterile pinnae lanceolate in outline, deeply cleft into oblong segments.—Occurs sparingly in moist sandy woods in the vicinity of Sibley. May–June.

## FAMILY 3. POLYPODIACEAE R. Br.

Sporangia having an elastic ring which splits open and discharges the spores. Sporangia borne in clusters (sori) on the back or margins of the frond. Rootstocks usually slender and horizontal. Sori covered by an indusium, or naked.

| | |
|---|---|
| Sterile and fertile fronds very dissimilar. | 1. ONOCLEA. |
| Sterile and fertile fronds similar. | |
| Indusium formed of margin of frond. | |
| Indusium continuous around each segment. | 10. PELLAEA. |
| Indusium not continuous around each segment. | 9. ADIANTUM. |
| Indusium not formed from the frond margin. | |
| Fronds white and powdery on lower surface. | 11. NOTHOLAENA. |
| Fronds not white and powdery on lower surface. | |
| Sori linear in outline. | |
| Fronds entire, rooting at apex. | 6. CAMPTOSORUS. |
| Fronds pinnate. | |
| Sori straight. | 8. ASPLENIUM. |
| Sori curved. | 7. ATHYRIUM. |
| Sori round or roundish. | |
| Fronds evergreen. | 4. POLYSTICHUM. |
| Bog herbs. | 5. DRYOPTERIS. |
| Fronds not evergreen and plants not growing in bogs. | |
| Stipes chaffy; fronds granular-puberulent. | 2. WOODSIA. |
| Stipes almost smooth: fronds smooth. | 3. FILIX. |

### 1. ONOCLEA L.

Sporanges pedicelled, forming round sori, covered by the membranous indusia, which are attached to the lower side of the sori. Fertile fronds much contracted, the sterile leaf-like.

**1. O. sensibilis** L. SENSITIVE FERN. Sterile frond triangular in outline, pinnatifid into lanceolate more or less sinuate-pinnatifid segments: fertile fronds bipinnate: pinnae roundish.—Rather rare in swampy woods. Near Independence, Lake City, Courtney and Sibley. August–October.

### 2. WOODSIA R. Br.

Sori borne on the back of the veins. Indusium attached by the base all around the receptacle, early bursting at the top into irregular lobes.

**1. W. obtusa** (Spreng.) Torr. CHAFFY FERN. Fronds numerous, 4′–12′ long, lanceolate in outline: pinnae triangular-ovate, pinnately parted with oblong irregularly cut-toothed segments: indusium splitting into 5–7 broad segments acutely jagged at the apex.—Frequent throughout the county on rocks. June–August.

### 3. FILIX Adans.

Delicate ferns with pinnate leaves and round sori borne on the back of the veins. Indusium hood-shaped, attached by the base on the inner side, *i. e.*, towards the middle of the frond, soon withering away.

**1. F. fragilis** (L.) Underw. WOOD FERN. Stipe almost glabrous, 2′–8′ long, from a slender rootstock: frond about as long as stipe, broadly lanceolate in outline: pinnae triangular-ovate, irregularly pinnatifid, the pinnules cut-toothed: indusium acute at the free apex.—Our most common fern, abundant in rocky woods. Late fruiting plants growing on shaded rocks occasionally develop a few chaffy bulblets in the axils of the pinnae. Such forms have been found at Swope Park, along Brush Creek, and near Courtney. May–September.

### 4. POLYSTICHUM Roth.

Fronds pinnate, bearing round sori on the back of the veins. Indusium flattish, orbicular and peltate, fixed by the center.

**1. P. acrostichoides** (Michx.) Schott. CHRISTMAS FERN. Stipes densely chaffy from a stout rootstock: fronds 10′–30′ long, simply pinnate, the rachis chaffy: pinnae slightly stalked, linear-lanceolate, serrulate with bristly teeth, very oblique at base: sori borne on the upper part of the fertile fronds, confluent: indusium orbicular and peltate, fixed by the depressed center.—In rocky woods along the Missouri River bluffs. Not common. July–October.

### 5. DRYOPTERIS Adans.

Differs from the last genus chiefly in having the cordate-reniform or orbicular indusium fixed by the sinus.

**1. D. Thelypteris** (L.) A. Gray. Bog Fern. Rootstocks slender, long, creeping, black : stipe smooth, 9′–20′ high : frond 9′–12′ long, pinnate and slightly downy : pinnae 1′–2′ long, long-lanceolate in outline, pinnatifid into oblong lobes, each pinna bearing from 10–18 sori : veinlets forking : indusium reniform.—In a bog along the foot of the bluffs about two miles west of Sibley. July–August.

### 6. CAMPTOSORUS Link.

Low spreading ferns with undulate-margined fronds and linear sori which are irregularly scattered on either side of the reticulated veinlets. Indusium fixed lengthwise to the veinlet.

**1. C. rhizophyllus** (L.) Link. Walking Fern. Fronds evergreen, thick, cordate at base, gradually narrowing into a long, slender tip, which takes root and forms a new plant : sori numerous.—In dense patches on moss-covered rocks in shady woods throughout, but nowhere common. June–October.

### 7. ATHYRIUM Roth.

Fronds twice pinnate with oblong or linear sori oblique to the midvein. Indusia curved, fixed lengthwise to inner side of vein.

**1. A. Filix-foemina** (L.) Roth. Lady Fern. Fronds numerous, from a rather stout rootstock, 8′–30′ long, oblong-lanceolate with about twenty pairs of long-lanceolate pinnae : pinnae once pinnatifid, the segments incised.—A handsome symmetrical fern, locally common in sandy woods west of Sibley. June–August.

### 8. ASPLENIUM L.

Fronds once pinnate. Sori linear or oblong, oblique to the midvein. Indusia straight, fixed lengthwise to inner side of vein.

| | |
|---|---|
| Pinnae entire : 1°–4° high. | 1. *A. angustifolium.* |
| Pinnae variously incised : low ferns. | |
| Sori few, not crowded. | 2. *A. parvulum.* |
| Sori numerous, crowded. | 3. *A. platyneuron.* |

**1. A. angustifolium** Michx. Tall Spleenwort. 2°–4° high : pinnae 20–40 pairs, long-lanceolate, acuminate : sori crowded, covering the lower surface of the pinnae.—Frequent in rich woods along the Missouri River bluffs, especially west of Sibley. August–September.

**2. A. parvulum** Mart. & Gal. Small Spleenwort. Stipes tufted, black, short : fronds oblong-linear, 4′–12′ long : pinnae 3″–5″ long, oblong, crenulate, auricled on the upper side : fruit dots one to seven pairs on each pinna, midway between the midvein and the margin.—A few plants were found in 1884 in a thicket on the bluffs near Courtney. The station has since been destroyed. June–October.

**3. A. platyneuron** (L.) Oakes. EBONY SPLEENWORT. Resembles the last, but with thinner and longer pinnae: sori 4–12 pairs, rather crowded, nearer the midrib than the margin.—On mossy rocks on the bluffs at Courtney. Two stations, one of which has been destroyed. There are but few plants at the other. July–November.

### 9. ADIANTUM L.

Fronds much divided. Sori marginal, covered by a reflexed and altered portion of the pinnule, which serves as an indusium.

**1. A. pedatum** L. MAIDEN HAIR FERN. A very graceful fern, 9′–20′ high: fronds reniform in outline, forking at the top of the dark stipe, each fork with 3–7 radiating pinnae, each pinna with from 10–40 alternate, stalked pinnules: pinnules broadly triangular, entire along lower margin, upper margin more or less cleft: sori usually five to each pinnule, borne along the upper margin.—Rather common in rich woods. July–November.

### 10. PELLAEA Link.

Sori marginal, at length forming a continuous marginal line, and covered by the reflexed portion of the frond, which serves as the indusium.

**1. P. atropurpurea** (L.) Link. CLIFF BRAKE. 2′–12′ high: rootstock densely chaffy: stipe and rachis purplish-black, usually strongly puberulent: fronds coriaceous, twice pinnate, ovate-lanceolate in outline: pinnules 3″–12″ long, oblong-linear, crenulate.—Rather common on limestone rocks. June–September.

Var. **Bushii** Mackenzie, n. var. Stipe and rachis brownish-red, but slightly hairy: fronds thinnish, simply pinnate above, the lower pinnae ternate or rarely quinate.—Dry rocks at Swope Park.

### 11. NOTHOLAENA R. Br.

Fronds pinnate. Sori roundish, marginal, at first covered with the inflexed margin of the pinnules, but with no proper indusium.

**1. N. nivea dealbata** (Pursh) Davenp. POWDERY CLIFF BRAKE. A small, densely tufted fern, 1′–4′ high: stipe, rachis and branches brown and shining: fronds triangular-ovate in outline, 3–4-pinnate: ultimate segments 1″ long, usually entire.—In clefts of limestone rocks throughout the western and southern parts. Not uncommon. June–September.

## FAMILY 4. SALVINIACEAE Reichenb.

Small floating plants with elongated, often branching axis and two-ranked leaves, having two or more thin-walled, 1-celled sporocarps on a common stalk. Sporocarps with a central receptacle bearing macrosporanges containing one macrospore, or microsporanges containing numerous microspores.

### 1. AZOLLA Lam.

Minute moss-like water plants with pinnately branching stems and imbricated leaves. Sporocarps of two kinds, in pairs in the axils.

**1. A. Carolinlana** Willd. Plants reddish or greenish, 6″ or less high : leaves minute, with ovate lobes at the base.—In ponds at Atherton, Lake City and Sibley. Common at times. July–October.

## Family 5. EQUISETACEAE Michx.

Rush-like often branching herbs, with hollow, jointed, striate stems, bearing sheaths at the joints. Sporanges 1-celled, borne underneath the shield-shaped scales of the terminal cone-like spike. Spores all similar, numerous, each provided with four ligule-like appendages.

### 1. EQUISETUM L.

Characters of the family.

| | |
|---|---|
| Stems 1½° or less high. | |
| Sheaths of sterile stems 4-toothed. | 1. *E. arvense.* |
| Sheaths of sterile stems 5–10-toothed. | 2. *E. variegatum.* |
| Stems 2°–10° high. | |
| Stems slender. | 3. *E. hyemale.* |
| Stems robust. | 4. *E. robustum.* |

**1. E. arvense** L. Horse-tail. Fertile stems without chlorophyll, preceding the sterile, unbranched : sheaths about five, 7″–8″ long, white, bearing twelve brown acuminate teeth : fructification about 1′ long, cylindric : sterile stems green, slender, branched : branches four-angular. —Common on wet banks, the fertile stems appearing in April.

**2. E. variegatum** Schleich. Slender Scouring-rush. Stems tufted, all with chlorophyll, slender, 5–10-grooved : sheaths partly black.—Muddy sand-bars along the Missouri River. Common at times. Never collected in fruit here.

**3. E. hyemale** L. Common Scouring-rush. Stems unbranched, the numerous ridges each bearing two lines of tubercles : sheaths short, with a black ring at base and a black base to the caducous teeth : fructification less than 6″ long.—Of rare occurrence on wet banks along the Missouri River at Courtney.

**4. E. robustum** R. Br. Stout Scouring-rush. Like the preceding, but very robust, the ridges of the stem each bearing one line of tubercles. —Very common in bottoms, especially along the Missouri River.

## Family 6. ISOETACEAE Underw.

Rush-like herbs with numerous linear awl-shaped leaves from a subterranean rather small trunk. Sporanges sessile in the axils of the leaves, rather large, orbicular or ovoid and plano-convex, partly covered by a fold from the inner side of the leaf-blade (the velum), the outer bearing macrospores, the inner microspores.

### 1. ISOETES L.

Characters of the family.

1. **I. melanopoda** J. Gay. QUILLWORT. Leaves 10–60, 4′–12′ long, slender and keeled, black and shining at base.—Low prairies which are wet in spring, but dry in summer. Near Lake City and Dodson. Local. May–July.

## Subkingdom SPERMATOPHYTA.

Plants producing true seeds, formed from the fertilization of the ovules by the pollen.

## CLASS I. GYMNOSPERMAE.

Ovules not enclosed in an ovary.

### FAMILY 7. PINACEAE Lindl.

Resinous trees with awl-shaped entire leaves. Stamens and ovules borne in separate aments. Perianth none.

### 1. JUNIPERUS L.

Evergreens with verticillate or opposite leaves and dioecious flowers in small globose aments. Each scale in the pistillate ament bearing a single erect ovule. Cotyledons two. Fruit berry-like.

1. **J. Virginiana** L. RED CEDAR. Usually a large tree: leaves of two kinds, opposite, either awl-shaped and spiny-tipped or scale-like, imbricate, appressed and four-ranked: berries blue.—Young trees a few inches high occasionally occur in rocky woods throughout the western portion. There are also a few large trees north and west of Lee's Summit. April.

## CLASS II. ANGIOSPERMAE.

Ovules borne in an ovary.

### Subclass 1. MONOCOTYLEDONES.

Embryo with one cotyledon. Leaves usually parallel-veined. Parts of the flowers in threes.

### FAMILY 8. TYPHACEAE J. St. Hil.

Marsh plants with long, linear, nerved and sessile leaves. Flowers monoecious in dense terminal spikes, staminate uppermost. Perianth parts formed of bristles. Stamens 2–7 with connate filaments. Ovary 1–2-celled with as many styles, stipitate. Fruit nut-like, usually one-seeded.

### 1. TYPHA L. Cat-tail.

Possessing the family characteristics as given above.

| | |
|---|---|
| Staminate and pistillate flowers separated. | 1. *T. angustifolia.* |
| Staminate and pistillate flowers not separated. | 2. *T. latifolia.* |

**1. T. angustifolia** L. Like the next but with narrower leaves and spikes: pollen grains single.—Ponds near Courtney and Independence. Rare. June–July.

**2 T. latifolia** L. 3°–10° high: leaves 3″–10″ broad: staminate and pistillate portion of spike contiguous, each from 3′–12′ long, and often an inch or more in diameter: pollen grains in fours.—Swampy grounds throughout the county. Often common. June.

## Family 9. SPARGANIACEAE Agardh.

Marsh plants with general aspect of the last family but flowers in widely separated heads in a branching inflorescence. Staminate heads uppermost, conspicuously white. Perianth formed of from 3–6 irregular scales. Filaments usually five, distinct. Ovary sessile, 1–2-celled, with as many styles. Fruit usually 1-celled, very hard.

### 1. SPARGANIUM L.

Characters of the family.

| | |
|---|---|
| Fruit truncate at apex. | 1. *S. eurycarpum.* |
| Fruit tapering at apex. | 2. *S. androcladum.* |

**1. S. eurycarpum** Engelm. Big Bur-reed. Stems 2°–8° high, with long, slightly keeled, flat leaves: pistillate heads 2–6, 10″–16″ in diameter at maturity: nutlets sessile, broad and truncate, many-angled.—Locally abundant. In swamps at Lake City, Buckner, and west of Sibley. June.

**2. S. androcladum** (Engelm.) Morong. Slender Bur-reed. Resembles the last but smaller throughout: nutlets stalked, fusiform.—Wet grounds three miles west of Sibley. Local. June.

## Family 10. NAIADACEAE Lindl.

Aquatic herbs with leafy stems and perfect or unisexual flowers. Perianth of four segments or wanting. Stamens 1–4, hypogynous and distinct in the fertile flowers, and with extrorse anthers. Ovaries one or four, one-ovuled.

| | |
|---|---|
| Flowers perfect, ovaries four. | 1. Potamogeton. |
| Flowers not perfect, ovary one. | 2. Naias. |

### 1. POTAMOGETON L. Pondweed.

Herbs floating in still water or growing in the mud with two ranked alternate or imperfectly opposite leaves. Flowers borne on usually emersed spikes. Sepals, stamens and pistils four each. Sepals rounded

and sessile with stamens inserted on their base. Pistils one-celled and one-seeded, forming hard nutlets in fruit.

| | |
|---|---|
| Leaves all submersed and similar. | 1. *P. foliosus.* |
| Floating leaves different from the submersed. | |
| Submersed leaves linear. | 2. *P. Spirillus.* |
| Submersed leaves lanceolate or broader. | 3. *P. Lonchites.* |

**1. P. foliosus** Raf. Stems much branched, 2°–3° long : leaves linear, 1–3-nerved, 1′–2′ long, 1″ wide : spikes 1–14-flowered : fruit roundish, strongly keeled, the keel irregularly sinuate-dentate.—Hiffner's Lake near Atherton. June–July.

**2. P. Spirillus** Tuckerm. Larger floating leaves 9″–16″ long, 3″–8″ wide, longer than the slightly dilated petioles, strongly 7–14-nerved : submersed leaves 1′–2′ long, ½″ wide : submersed spikes short-pedicelled, capitately 4–10-flowered : fruit nearly 1″ long, keeled on the back, with 4–5 teeth or wingless.—Ponds along the Little Blue River between Atherton and Glendale ; Grain Valley. May–July.

**3. P. Lonchites** Tuckerm. Floating leaves pointed at both ends, more or less elliptical in outline, 2′–4′ long, 12″–20″ wide : submersed leaves reticulated, lanceolate, thin, 9′–13′ long, 6″–12″ wide : spikes 1′–2′ long, cylindrical, heavily fruited : fruit keeled.—Common in a pond near Sheffield, in Fish Lake, and in Hiffner's Lake. June–August.

### 2. NAIAS L.

Slender submerged aquatics with opposite spinulose toothed sessile leaves. Flowers monoecious or dioecious, axillary, solitary and sessile. Sterile flower consisting of a single stamen inclosed in a double perianth, the pistillate of a single naked ovary. Fruit small and sessile.

**1. N. flexilis** (Willd.) Rostk. & Schmidt. Delicate and slender with minutely serrulate linear leaves about 1′ long and 1″ wide : sheaths conspicuous, minutely toothed : seeds obscurely sculptured.—In the pond north of Sheffield. Rare. June–July.

## Family 11. ALISMACEAE DC.

Marsh herbs with racemose-paniculate flowers on scapes. Petals and sepals three each, the former white. Stamens six or more. Ovaries numerous, one-celled, one-ovuled. Fruit an achene. Roots fibrous. Leaves numerous, all radical, and long-petioled.

| | |
|---|---|
| Flowers perfect. | |
| Stamens six, leaves lanceolate. | 1. Alisma. |
| Stamens twelve, leaves usually cordate. | 2. Echinodorus. |
| Stamens 9–15, leaves sagittate. | 3. Lophotocarpus. |
| Flowers not perfect. | 4. Sagittaria. |

### 1. ALISMA L.

Flowers rather small, on three-bracteolate pedicels. Numerous ovaries in a single whorl on a flat receptacle. Achenes flat, ribbed on the back and sides.

1. **A. Plantago** L. WATER PLANTAIN. Leaves ovate or ovate-lanceolate, 3–10-nerved: panicle compound, many-flowered, 8′–2° high.—Abundant in the pond north of Sheffield, at Lake City, Fish Lake and Hiffner's Lake. June–September.

### 2. ECHINODORUS Rich.

Inflorescence usually somewhat branched, bearing the pedicelled flowers in whorls of 3–6. Ovaries many, capitate, on a large convex receptacle. Achenes ribbed and beaked, forming spinose heads.

1. **E. cordifolius** (L.) Griseb. BUR-HEAD. Leaves of two kinds, the emersed thick, broadly ovate, cordate at base, the blade 6′–8′ long, and nearly as wide: the submersed leaves smaller, thin and often pellucid, lance-ovate and rounded at base: scape erect, 1°–3° high.—Often common in swamps and ditches in the Missouri River bottoms. June–September.

Var. **lanceolatus** (Engelm.) Mackenzie & Bush, n. comb. A low form not more than 6′ high with narrowly lanceolate leaves acute at base, and a small panicle bearing few heads.—Hiffner's Lake near Atherton. July. (*E. rostratus* var. *lanceolatus* Engelm.)

### 3. LOPHOTOCARPUS T. Durand.

Verticels few-flowered, the lower flowers perfect, the upper staminate. Sepals inclosing fruit. Pistils numerous. Achenes winged.

1. **L. calycinus** (Engelm.) J. G. Smith. FALSE ARROW-HEAD. Scape 3′–15′ high, shorter than the leaves, at length decumbent: flowers borne on long pedicels, the fertile pedicels recurved: leaves broadly sagittate or hastate, the lobes widely spreading.—Uncommon on wet sand-bars along the Missouri River, but abundant in the pond north of Sheffield, and at Hiffner's Lake. July–October.

### 4. SAGITTARIA L. ARROW-HEAD.

Much like the last. Lower flowers pistillate, the upper staminate. Sepals reflexed or spreading in fruit. Stamens usually numerous, covering the convex receptacle. Rootstocks bearing large tubers which often completely cover the bottoms of swamps where these plants are numerous.

| | |
|---|---|
| Fruiting heads sessile. | 2. *S. rigida.* |
| Fruiting heads pedicelled. | |
| Leaf-blades sagittate. | 1. *S. latifolia.* |
| Leaf-blades lanceolate. | 3. *S. graminea.* |

**1. S. latifolia** Willd. Scape 3′–4° high : filaments glabrous : achene about 1″ long, winged on both margins with a long horizontal beak : leaves in our plant usually large and broad.—Common throughout in ponds and along streams. June–October.

**2. S. rigida** Pursh. Scape weak, shorter than the leaves, the latter lance-oval, entire or with one or two basal lobes : fertile flowers sessile : pedicels of sterile flowers 1′ or less long : filaments glandular-pubescent : achenes long-beaked.—Common in ponds at Lake City, Sheffield, and Atherton. June–September.

**3. S. graminea** Michx. 1° high : leaves long-petioled, often bladeless : flowers all pedicelled : filaments pubescent : achene less than 1″ long, slightly winged, short-beaked.—Common in ponds at Lake City, Sheffield, and Atherton. June–September.

## Family 12. VALLISNERIACEAE Dumort.

Aquatic herbs with regular dioecious flowers from a spathe. Perianth segments in fertile flowers adherent at base to ovary. Ovary 1-celled with three parietal placentae. Indehiscent fruit ripening under water.

### 1. PHILOTRIA Raf.

Branching very leafy stems submersed. Leaves 1-nerved, sessile, pedicelled. Flowers sessile, from a 2-cleft spathe. Perianth segments six. Sterile flowers minute, with 9 stamens, breaking off and floating on the surface of the water. Pistillate flowers with a very long capillary tube, floating. Stigmas 3, two-lobed.

**1. P. Canadensis** (Michx.) Britton. Water-weed. Leaves 2″–7″ long, opposite or verticillate, serrulate.—In Fish Lake and in ponds along the Little Blue north of Glendale. June.

## Family 13. GRAMINEAE Juss.

A large and very important order of herbaceous plants with (usually) hollow stems closed at the joints. Leaves sheathing. Inflorescence very varied, consisting of spikelets formed of flowers solitary in the axils of two-ranked scales, called glumes. Lower glumes empty. Upper glumes containing flowers which are usually enveloped in a thin scale, called the palet. Flowers perfect or imperfect. Stamens usually three. Ovary one-celled, one-ovuled. Styles two. Fruit a seed-like grain.

I.

Spikelets 1–2-flowered. Rachis articulated below the glumes, so that the spikelets break off as a whole.
Flowers monoecious.
Fertile spikelets imbedded in the thick rachis. 1. Tripsacum.
Flowers panicled, pedicelled. 11. Zizania.

Flowers perfect, staminate or wanting.
Spikelets much flattened laterally. 12. HOMALOCENCHRUS.
Spikelets not much flattened laterally.
Flowering glume with a short hooked awn. 27. HOLCUS.
Flowering glume long-awned.
Inflorescence spike-like.
Flowers long-silky. 2. ANDROPOGON.
Flowers not silky. 8. PANICUM.
Inflorescence panicled.
Flower with two plumose pedicels at base. 3. SORGHASTRUM.
Flower without plumose pedicels at base. 4. SORGHUM.
Flowering glume not awned.
Flowers in open panicles. 8. PANICUM.
Flowers in spikes.
Spikelets subtended by an involucre.
Involucre spiny. 10. CENCHRUS.
Involucre consisting of bristles. 9. CHAETOCHLOA.
Spikelets not subtended by an involucre.
Rachis produced beyond uppermost spikelet.
Rachis wider than spikes. 5. PASPALUM.
Rachis not wider than spikes. 30. SPARTINA.
Rachis not produced beyond uppermost spikelet.
Spikelets obovate, with carinate glumes. 33. BECKMANNIA.
Spikelets plano-convex, not carinate.
Spikelets obtuse. 5. PASPALUM.
Spikelets acute.
Spikes digitate at top of culm. 7. SYNTHERISMA.
Spikes not digitate. 6. ERIOCHLOA.

II.

Spikelets 1-many-flowered. Rachis articulated above the two lower glumes, so that they remain when the flower breaks off.
Spikelets not arranged in rows.
Spikelets with one perfect flower. A.
Spikelets with two or more perfect flowers. B.
Spikelets in two rows in one-sided spikes. C.
Spikelets in two rows on opposite sides of a spike. D.

A.

Flowers three-awned. 15. ARISTIDA.
Flowers awnless or one-awned.
Panicle open, not spike-like.

| | |
|---|---|
| Flowers (not outer glumes) long-hairy at base. | |
| Flowering glumes short-awned. | 24. CALAMAGROSTIS. |
| Flowering glumes not awned. | 25. CALAMOVILFA. |
| Flowers not long-hairy at base. | |
| Flowering glume long-awned. | |
| Awn very long, twisted. | 16. STIPA. |
| Awn long, flexuose. | 18. BRACHYELYTRUM. |
| Awn very capillary. | 26. APERA. |
| Flowering glume not long-awned. | |
| Spikelets flattened, bearing an awn $\frac{1}{4}''$ long. | 22. CINNA. |
| Spikelets not flattened and awnless. | |
| Third scale longer than first. | 21. SPOROBOLUS. |
| Third scale shorter than first. | 23. AGROSTIS. |
| Panicle spike-like. | |
| Flowering glumes not awned. | |
| Glumes five, the third and fourth very small. | 13. PHALARIS. |
| Glumes three. | |
| Empty glumes obliquely truncate. | 19. PHLEUM. |
| Empty glumes acute. | |
| Flowering glumes thinner than empty glumes. | 21. SPOROBOLUS. |
| Flowering glumes thicker than empty glumes. | 17. MUHLENBERGIA. |
| Flowering glumes awned. | |
| Spikes compound. | 17. MUHLENBERGIA. |
| Spikes simple. | |
| Glumes five; sweet-smelling grass. | 14. ANTHOXANTHUM. |
| Glumes three; not sweet smelling. | 20. ALOPECURUS. |

B.

| | |
|---|---|
| Tall reeds with rachis and flowers long-villous. | 36. PHRAGMITES. |
| Not tall reeds and rachis and flowers not long-villous. | |
| Flowering glume awned from the middle. | |
| Spikelets less than 6″ long. | 28. TRISETUM. |
| Spikelets more than 6″ long. | 29. AVENA. |
| Flowering glume awnless or awned from the apex. | |
| Flowering glume toothed or lobed at apex. | |
| Spikelets sessile. | 38. DIPLACHNE. |
| Spikelets pedicelled. | 37. SIEGLINGIA. |
| Flowering glume not toothed or lobed at apex. | |
| Flowering glumes 3-nerved. | |
| Glumes thick and coriaceous; panicle few-flowered. | 43. KORYCARPUS. |
| Glumes not thick and coriaceous; panicles many-flowered. | |

| | |
|---|---|
| Empty glumes very dissimilar in outline. | 40. EATONIA. |
| Empty glumes similar in outline. | |
| Panicle spike-like. | 41. KOELERIA. |
| Panicle open. | 39. ERAGROSTIS. |
| Flowering glumes 5–many-nerved. | |
| Glumes papery. | 42. MELICA. |
| Glumes not papery. | |
| Glumes strongly keeled. | |
| Glumes awned. | 46. DACTYLIS. |
| Glumes not awned. | |
| Large spikelets in drooping panicles. | 44. UNIOLA. |
| Spikelets erect. | |
| Plants dioecious. | 45. DISTICHLIS. |
| Plants not dioecious. | 47. POA. |
| Glumes rounded on back. | |
| Flowering glume awned. | |
| Spikelets strongly pedicelled. | 50. BROMUS. |
| Spikelets nearly sessile. | 49. FESTUCA. |
| Flowering glume awnless, obtuse and scarious at apex. | 48. PANICULARIA. |
| Flowering glume awnless, acute at apex. | 49. FESTUCA. |

C.

| | |
|---|---|
| Spikes digitate. | 34. ELEUSINE. |
| Spikes not digitate. | |
| Spikelets with two or more perfect flowers. | 35. LEPTOCHLOA. |
| Spikelets with one perfect flower. | |
| Spikes long and very slender. | 31. SCHEDONNARDUS. |
| Spikes short and broad. | 32. BOUTELOUA. |

D.

| | |
|---|---|
| Spikes one to each joint of the rachis. | |
| Placed edgewise on the rachis. | 51. LOLIUM. |
| Placed flatwise on the rachis. | 52. AGROPYRON. |
| Spikelets two or more to each joint of the rachis. | |
| Empty glumes waiting. | 55. HYSTRIX. |
| Empty glumes present. | |
| Spikelets all perfect. | 54. ELYMUS. |
| Spikelets three at each joint, the lateral ones sterile. | 53. HORDEUM. |

### 1. TRIPSACUM L.

Tall perennial grasses with monoecious flowers in jointed spikes which are staminate above and pistillate below. Staminate spikes two-flowered, in pairs at each node. Glumes four, the outer coriaceous, the inner thin. Pistillate spikelets one-flowered, deeply imbedded in the thick rachis. Stigmas conspicuous, purple.

**1. T. dactyloides** L. GAMA GRASS. 4°–8° high, bearing 1–3 spikes at the summit, as well as some from the upper axils: leaves broad and flat.—Common throughout in wet places, especially in prairie swales. June–July.

### 2. ANDROPOGON L. BROOM-GRASS.

Perennials, bearing spikelets in pairs at each joint of the rachis, one of them perfect and sessile with four glumes, the lower thick, the second acute and carinate, the upper two thin. Flowering glume more or less awned. The other spikelet pedicelled and sterile.

| | |
|---|---|
| Spikes not in pairs or clustered. | 1. *A. scoparius.* |
| Spikes in pairs or digitate. | |
| Hairs on rachis internodes 1″ long. | 2. *A. furcatus.* |
| Hairs on rachis internodes 1½″–2″ long. | 3. *A. chrysocomus.* |
| Spikes densely clustered. | 4. *A. Torreyanus.* |

**1. A. scoparius** Michx. 1°–4° high: spikes peduncled, numerous, hairy with long dull white hairs: sterile spikelet an awn-pointed scale: awn of fertile spikelet about 5″–6″ long.—Common in open rocky woods and prairies, especially in the southern part. July–September.

**2. A. furcatus** Muhl. Tall, 3°–6° high: spikes 2–5, approximate at the summit: hairs on the rachis and pedicels short: sterile spikelet staminate, with four scales: awn of fertile spikelet 5″–7″ long, bent.—Common in similar situations, and usually with the last. July–September.

**3. A. chrysocomus** Nash. Closely resembles the last, but outer scales of sessile spikelets smooth except on nerves (hispidulous in *A. furcatus*), and rachis hairs longer and usually yellow.—In similar situations as the last. August–October.

**4. A. Torreyanus** Steud. 2°–4° high: spikes numerous, in a terminal, spicate panicle: hairs of spikelet long, white: sterile spikelet scale-like: awn of fertile spikelet 4″–6″ long, bent.—Well adventized in one locality at Sheffield; also near Red Bridge. June–September.

### 3. SORGHASTRUM Nash.

Tall perennials with spikelets in pairs or threes in an open panicle, the middle one sessile and perfect with four scales, the outer thick and shining. Lateral flowers pedicelled, reduced to plumose pedicels.

**1. S. avenaceum** (Michx.) Nash. INDIAN GRASS. 3°–6° high: panicle branches erect spreading: spikelets yellowish or brownish, hairy: awn twisted, 5″–10″ long, the column not bent.—In dry open soil, throughout. Probably includes two species with us. August–September.

### 4. SORGHUM Pers.

Spikelets two together, one sessile and fertile, the other pedicelled, sterile. Perfect spikelet with four scales, the fourth awned.

**1. S. Halepense** (L.) Pers. JOHNSON-GRASS. 3°–5° high: leaves long and broad: panicle often 1° long: outer glumes of spikelets pubescent.—Frequently adventized along railroads.—June–September.

### 5. PASPALUM L.

Spikelets in 2–4 rows in one-sided spikes, awnless, plano-convex, very shortly pedicelled. Glumes three. Spike one to many.

| | |
|---|---|
| Rachis winged, spikes 20 or more. | 1. *P. mucronatum.* |
| Rachis not winged, spikes one to three. | |
| Culms erect. | 2. *P. Bushii.* |
| Culms reclining. | 3. *P. Muhlenbergii.* |

**1. P. mucronatum** Muhl. Annual: culms decumbent or ascending: rachis of spikes broadly winged, incurved, partly inclosing the spikelets, tapering to an acute point: spikelets in two rows, pubescent, rather pointed.—Along Sni-a-bar Creek about three miles south of Grain Valley. August–October.

**2. P. Bushii** Nash. Culms 2°–3° high, erect: leaves densely short soft-pubescent on both sides: racemes in twos or threes: spikelets 1″ long, the empty scales pubescent.—Occasional in sandy grounds, especially in the Missouri bottoms. Often appears as if adventized. August–October.

**3. P. Muhlenbergii** Nash. Resembles the last but culms reclining: leaves sparsely pubescent with long hairs: racemes solitary or in twos and spikelets glabrous.—In a field near Roanoke, Kansas City. August–October.

### 6. ERIOCHLOA H B.K.

Perennial grasses with flowers in panicled spikes. Spikelets with a callus at base. Glumes three, the two outer acute and membranous, the shorter inner one obtuse and hardened.

**1. E. punctata** (L.) O. Hamilt. DOTTED MILLET. Ascending culms 1½° high, bearing 4–15 spikes, the latter 1′–2′ long: spikelets hairy, about 2″ long.—Occasional in the railroad yards at Sheffield. July–August.

### 7. SYNTHERISMA Walt.

Annual grasses with flowers in spikes, approximate at the summit of the culm. Spikelet awnless and pointless with four scales, the lowest minute or wanting.

| | |
|---|---|
| Rachis three-angled, not winged. | 1. *S. filiformis.* |
| Rachis flat, winged. | |
| Sheaths and leaves glabrous. | 2. *S. linearis.* |
| Sheaths and leaves more or less pubescent. | 3. *S. sanguinalis.* |

**1. S. filiformis** (L.) Nash. SLENDER CRAB-GRASS. Erect slender culms 1°–3° high: spikes 2–8, erect, filiform, 2′–5′ long: spikelets ¾″ long: lower glumes wanting.—Occasionally occurs in dry soil throughout the southern part. August–October.

**2. S. linearis** (Krock.) Nash. SMOOTH CRAB-GRASS. Culms decumbent: leaves short, 1′–3′ long, glabrous: spikes 2–6: spikelets 1″ long: first glume wanting: second glume as long as flowering one, hairy.—Common in sandy fields, especially along the Missouri River. July–October.

**3. S. sanguinalis** (L.) Dulac. CRAB-GRASS. Culms erect, ascending or spreading, 1°–3° long: leaves 2′–6′ long: spikes 3–12, spreading: spikelets $1\frac{1}{8}$″ long: lowest glume present: second glume half as long as the flowering one.—Growing everywhere in fields. July–October.

### 8. PANICUM L. PANIC GRASS.

Spikelets with one pistillate and sometimes one additional staminate flower. Glumes four, the three lower membranous, the two lower empty, the third usually empty or sometimes bearing a staminate flower. Fourth scale thick and shiny, inclosing a similar palet.

Some or all the flowers awned. 1. *P. Crus-Galli.*
Flowers never awned.
All leaves similar; panicle elongated. A.
Basal leaves shorter and broader than the culm leaves; panicle short. B.

A.

Smooth throughout.
Spikelets 2″ long. 12. *P. virgatum.*
Spikelets 1″–$1\frac{1}{2}$″ long or less. 14. *P. proliferum.*
Spikelets $\frac{2}{3}$″ long. 2. *P. agrostoides.*
More or less pubescent, especially the lower sheaths.
Spikelets 2″ long or more. 13. *P. miliaceum.*
Spikelets $1\frac{1}{2}$″ long or less.
Panicle bearded in the axils. 17. *P. cognatum.*
Panicle not bearded in the axils.
Culms stout and much branched. 15. *P. capillare.*
Culms slender, branching only from base. 16. *P. flexile.*

B.

Culm leaves long and linear. 11. *P. perlongum.*
Culm leaves lanceolate or broader.
Spikelets 1″ long or less.
Leaves almost glabrous. 8. *P. sphaerocarpon.*
Leaves pubescent.
Axis of panicle long-pilose. 10. *P. lanuginosum.*
Axis of panicle almost smooth. 9. *P. unciphyllum.*
Spikelets more than 1″ long.
Culm leaves broad and clasping at base.
Sheaths papillose-hispid. 5. *P. clandestinum.*
Sheaths not papillose-hispid.
Sheaths hairy. 3. *P. Porterianum.*
Sheaths glabrous. 4. *P. macrocarpon.*
Culm leaves lanceolate, hardly clasping at base.
Spikelets nearly glabrous. 6. *P. Scribnerianum.*
Spikelets very hairy. 7. *P. Liebergii.*

**1. P. Crus-Galli** L. BARNYARD GRASS. A coarse grass 1°–5° high, with long rough leaves: spikelets imbricated, making the 5–15

panicle branches appear spike-like: spikelets hispid.—Common in ditches and waste places. An occasional form is almost awnless. June–October.

2. **P. agrostoides** Spreng. Flat culms erect, 2°–3° high, branching: panicles 3′–5′ long: primary panicle-branches spreading, secondary appressed: spikelets numerous, crowded, $\frac{2}{3}$″ long: second and third scales equal, twice as long as the first, and longer than the fourth. Our plant is provided with long capillary involucral hairs at the base of the spikelet.—In swampy grounds. Near Adams (rare) and at Fish Lake. July–September.

3. **P. Porterianum** Nash. 1°–3° high: larger leaves 4′ long and 1′ wide, cordate-clasping at base, more or less hairy: nodes barbed: sheaths hairy: panicle 2′–4′ long, with ascending branches: spikelets $1\frac{1}{2}$″ long or more, hairy.—Frequent in rich woods. May–July.

4. **P. macrocarpon** Le Conte. Like the last, but nodes not barbed, sheaths glabrous, and leaves not hairy, but ciliate: spikelets more inflated.—Frequent in rich woods. May–July.

5. **P. clandestinum** L. 2°–5° high: sheaths very papillose-hispid: spikelets about $1\frac{1}{2}$″ long, smoothish: second and third scales plainly 9-nerved. In damp thickets. Not uncommon. May–July.

6. **P. Scribnerianum** Nash. 1°–2° high, growing in clumps: leaves spreading, 2′–4′ long, 3″–4″ wide, rough: sheaths papillose-hispid: culms and panicle smooth: panicle open, 2′–3′ long, 1′–2′ wide.—Common in dry woods. May–July.

7. **P. Liebergii** (Vasey) Scribn. Resembles the last but is more slender and with ascending leaves, hairy beneath: sheaths vefy pubescent: panicle much exserted, 2′–3′ long: spikelets about $1\frac{1}{2}$″ long, noticeably pubescent.—Common on prairies near Lee's Summit. Also at Buckner. May–June.

8. **P. sphaerocarpon** Ell. Culms 4′–10′ high, at length much-branched, smooth: leaves $1\frac{1}{2}$′–3′ long, 2″–3″ wide, smooth or sparingly long-ciliate at the clasping base: sheaths ciliate on margin: primary panicle 2′ long, much exserted: spikelets glabrous, $1\frac{1}{2}$″ long.—Sandy woods southeast of Grain Valley. June–July.

9. **P. unciphyllum** Trin. Culms 6′–10′ high, at length much-branched: leaves 2′–3′ long, 2″–3″ wide, papillose-hairy on both sides and long-ciliate: sheaths and culms long-hairy and nodes densely bearded: primary panicle 1′–2′ long, little or not at all peduncled: spikelets less than 1″ long, pubescent.—On dry prairies south of Lee's Summit, and in dry woods at Swope's Park. May–June.

10. **P. lanuginosum** Ell. Culms 12′–18′ high: leaves $1\frac{1}{2}$′–3′ long, 2″–4″ wide, hairy and sparingly ciliate: sheaths, culm and main branches of the panicle long-hairy: panicle $1\frac{1}{2}$′–3′ long: spikelets $\frac{3}{4}$″ long, pubescent.—Common in dry woods throughout. May–July.

**11. P. perlongum** Nash. A densely tufted perennial with smooth culms and hairy, long-linear leaves: primary panicle long-exserted, longer than the leaves, few-flowered: secondary panicle 4–8-flowered on short culms almost hidden by bases of the leaves: spikelets $1\frac{1}{2}''$ long, nearly smooth.—On dry rocky slopes on the prairie between Greenwood and Lee's Summit. Not common. May–June.

**12. P. virgatum** L. 2°–5° high: panicle 6′–18′ long, with numerous ascending branches, at length spreading or drooping: spikelets $2''$–$2\frac{1}{2}''$ long: second scale very sharp pointed.—Frequent throughout in low, usually sandy ground. July–September.

**13. P. miliaceum** L. Millet. Stout culms 1°–2° high: leaves 5′–6′ long with papillose-hispid sheath: panicle 4′–6′ long, dense, more or less included.—Sparingly adventive along the railroads at Sheffield and Courtney. July–August.

**14. P. proliferum** Lam. Culms erect to decumbent, geniculate, 2°–5° high: pyramidal panicle 4′–20′ long with numerous spreading branches which are flower-bearing for about two-thirds their length: spikelets $1''$ long, green or purplish.—Common along ponds and river banks, and one of the commonest of weedy grasses along the streets of Kansas City and other cities in the county. August–October.

**15. P. capillare** L. Witch Grass. Culms 6′–4° high, erect or decumbent and often very geniculate: sheaths, culms and leaves very hairy: terminal panicle at first included, at length exserted and widely spreading, 6′–14′ long with capillary branches.—Common in waste grounds, corn fields, etc. July-October.

**16. P. flexile** (Gattinger) Scribn. Closely resembling the last, but the leaves are narrower, smoother and more erect, the culm is strictly erect, and the branches of the long, ovoid panicle are ascending and not spreading.—In dry grounds throughout. Not uncommon. July–October.

**17. P. cognatum** Schultes. Culms decumbent, about 1° high: lower sheaths and axils of the panicle hairy, otherwise smooth: leaves 1′–3′ long, $2''$ wide: panicle 3′–8′ long, ovoid in outline: branches capillary and few-flowered, often 2′ long and but 1-flowered: spikelets $1\frac{1}{2}''$ long.—Sparingly introduced along the railroad at Courtney and Kansas City. July–October.

### 9. CHAETOCHLOA Scribn.

Annuals. Spikelets as in *Panicum*, but with from one to several bristles on the rachis below the point of attachment of the spikelet, the bristles therefore persistent. July–September.

Bristles downwardly barbed. 1. *C. verticillata.*
Bristles upwardly barbed.
  Spikes 4′ or more long, $\frac{1}{2}'$–2′ thick, noticeably compound. 4. *C. Italica.*

Spikes $3\frac{1}{2}'$ or less long, $\frac{1}{2}'$ or less thick, not noticeably compound.
Spikes yellow, very erect and closely flowered. 3. *C. glauca.*
Spikes green, less closely flowered and more nodding. 2. *C. viridis.*

**1. C. verticillata** (L.) Scribn. FOXTAIL. 1°–2° high, with a pale green spike 2′–3′ long: bristles one or two to each flower, slightly exceeding the spikelet.—Waste places in Independence. Uncommon.

**2. C. glauca** (L.) Scribn. YELLOW FOXTAIL. 1°–4° high, the slightly flexuous tawny yellow spike 1′–4′ long: bristles 6–11 to each spikelet, much longer than the spikelet: first scale shorter than the second: third and fourth scales equal, longer than the second: fourth scale transversely rugose.—Extremely abundant in waste places, cornfields, along railroads and the like.

**3. C. viridis** (L.) Scribn. GREEN FOXTAIL. Closely resembles the last, but the green spikes are more nodding and less closely flowered, and the bristles are fewer in number: the first scale one-third the length of the other three, which are about equal in length: fourth scale striate lengthwise and pitted.—Growing with the last and about as common.

**4. C. Italica** (L.) Scribn. MILLET. 2°–5° high with a large compound spike, 4′–8′ long, 10″–15″ broad, usually interrupted at base: bristles 2–3: spikelets much as in the last: heads nodding or erect.—Occasionally escaped into waste lots and along railroads.

Var. **Germanica** (Mill.) Scribn. HUNGARIAN GRASS. Smaller than the species: spikes about 6″ broad: bristles usually purplish.—In similar situations as the type.

## 10. CENCHRUS L.

Spikelets awnless; as in *Panicum*, but several are enclosed together in a horridly spiny involucre. Involucres forming an interrupted terminal spike.

**1. C. tribuloides** L. BUR-GRASS. A decumbent annual, 8′–20′ high: spikes about 2′ long, with 8–20 two-flowered heads: involucres pubescent, covered all over with short stout barbed spines.—A troublesome weed, often common in sandy grounds along the Missouri River. July–October.

## 11. ZIZANIA L.

A tall aquatic with monoecious flowers in a terminal panicle. Upper flowers pistillate and erect, long-awned, the lower staminate and drooping, unawned. Glumes two. Stamens six.

**1. Z. aquatica** L. WILD RICE. Annual, 3°–10° high, with long flat leaves, 1°–3° long: spikelets very deciduous, and early breaking from the rachis.—In the lake at Lake City. Rare. July–October.

## 12. HOMALOCENCHRUS Mieg. CUT-GRASS.

Lowland grasses with flat spikelets crowded in one-sided panicles. Spikelets usually imbricated over each other. Glumes two, strongly

flattened, usually ciliate on the keels, awnless, about equal in length, the second much narrower than the first. Leaves clothed with minute hooked prickles.

| | |
|---|---|
| Spikelets partly curved, $1\frac{1}{2}''$ long. | 1. *H. Virginicus.* |
| Spikelets flat, $2''$–$3''$ long. | 2. *H. oryzoides.* |

**1. H. Virginicus** (Willd.) Britton. Culms 1°–3° high with a finally long exserted panicle: spikelets crowded at the ends of the branches, closely appressed and somewhat curved around the branches: stamens one or two.—Rather common in low wet woods. August–October.

**2. H. oryzoides** (L.) Poll. Larger than the last with a larger diffusely branched panicle: stamens three.—Growing in dense masses around swamps and less luxuriantly along streams. Well distributed throughout. August–October.

### 13. PHALARIS L.

Flowers in panicles which are often very spike-like. Spikelets one-flowered with five glumes, the first and second large, keeled and thick, the third and fourth rudimentary (reduced to scales or bristles), the fifth subtending a similar palet and the flower.

| | |
|---|---|
| Panicle not spike-like; grass of wet grounds. | 1. *P. arundinacea.* |
| Panicle spike-like; grasses of waste places. | |
| Spikelets green, narrowly keeled. | 2. *P. Caroliniana.* |
| Spikelets white with green lines, broadly keeled. | 3. *P. Canariensis.* |

**1. P. arundinacea** L. Reed Canary Grass. Perennial, 2°–5° high, with long flat leaves; first and second glumes not winged.—Well distributed in wet grounds in the northeastern part. May–June.

**2. P. Caroliniana** Walt. Southern Canary Grass. Smooth annual about 2° high, with spike-like panicle $1'$–$3'$ long and about $6''$ wide, oblong in outline.—Rarely adventized along railroads from Sheffield to Courtney. May–June.

**3. P. Canariensis** L. Canary Grass. Annual 2°–3° high, with long-peduncled spike-like panicles $\frac{3}{4}'$–$1\frac{1}{2}'$ long, $5''$–$7''$ wide at base and tapering to the summit.—Rarely occurs in waste places and along railroads. May–June.

### 14. ANTHOXANTHUM L.

Glumes five, the first shorter than the second, the third and fourth empty, two-lobed and awned, the fifth shorter, about the length of the palet.

**1. A. odoratum** L. Vernal Grass. Annual about 2° high, with numerous slightly hairy, flat leaves: spikes long-exserted, $2'$–$3'$ long: third glume bearing an awn inserted on the back about the middle, and the fourth an awn inserted near the base.—Rarely adventized along the railroads at Courtney. May–June.

### 15. ARISTIDA L. Three-awned Grass.

Annual tufted grasses, with spikelets in spike-like racemes or panicles. Spikelets 1-flowered and with three scales, the third bearing three awns, sometimes united at the base.

| | |
|---|---|
| Middle awn abruptly reflexed. | |
| Not spiral at base. | 1. *A. gracilis.* |
| Spiral at base. | 2. *A. basiramea.* |
| Middle awn not abruptly reflexed. | |
| Awns 12″–36″ long. | 3. *A. oligantha.* |
| Awns 9″ or less long. | 4. *A. intermedia.* |

**1. A. gracilis** Ell. 6′–18′ high : leaves 1′–9′ long, flat or involute : panicles simple and few-flowered, the larger 4′–5′ long : second outer scale 2″–3″ long, sharp pointed : flowering scale 3″ long, its lateral awns erect, 1″ long, and its central awn abruptly reflexed, 3″–6″ long.—Occurs locally in dry sandy fields, five miles southeast of Grain Valley. September–October.

**2. A. basiramea** Engelm. Resembling the last, but first scale 3″–4″ long and second 4″–5″ long : flowering glume 5″ long, its central awn 6″–8″ long, spiral at base : lateral awns 3″ long.—Dry woods along Blue near Martin City.

**3. A. oligantha** Michx. Strongly tufted and much branching, 1°–2° high : panicles rather few-flowered : two lower scales awn-pointed, subequal, 6″–10″ long : awns spreading, the central 1′–3′ long, slightly longer than the lateral ones.—In dry soil throughout. Often very common. August–October.

**4. A. intermedia** S. & B. Annual, 1°–2° high, erect from a decumbent and branching base : panicle strict, about 6′ long : lower glumes sharp-pointed, 3″–4″ long, subequal : awns spreading, the central 6″–9″ long, the lateral slightly shorter.—On sand-bars along the Missouri River at Courtney; also at Quindaro, Kansas. Locally abundant. August–September.

### 16. STIPA L.

Usually tall grasses. Glumes three, the flowering glume coriaceous, convolute around the palet and grain, with a hairy callus at base, and bearing a long twisted awn articulated to the scale.

**1. S. spartea** Trin. Porcupine Grass. 2°–4° tall, with long convolute leaves : panicle long-exserted, rather simple : awn 5′–8′ long : flowers early deciduous.—Common locally on rocky prairies around Lee's Summit. One of our most peculiar grasses. May–June.

### 17. MUHLENBERGIA Schreb.

Spikelets one-flowered, borne in contracted panicles. Glumes three, the two outer thin and persistent, acute to awn-pointed. Flowering glume acute or bearing an awn.

| | |
|---|---|
| Flowering glume not awned. | |
| Lower glumes acute. | 1. *M. sobolifera.* |
| Lower glumes strongly acuminate. | |
| Flowering glume $1\frac{1}{2}''$ or more long. | 2. *M. Mexicana.* |
| Flowering glume $1''$ or less long. | 3. *M. polystachya.* |
| Lower glumes exceeding flowering glumes. | 4. *M. racemosa.* |
| Flowering glume awned. | |
| Lower glumes minute or wanting. | 5. *M. diffusa.* |
| Lower glumes $\frac{1}{2}$ to $\frac{2}{3}$ length of flowering glume. | 6. *M. tenuiflora.* |
| Lower glumes equalling flowering glume. | 7. *M. sylvatica.* |

**1. M. sobolifera** (Muhl.) Trin. 1°–3° high, erect: leaves 3′–4′ long, 2″–3″ wide: panicle very slender, much-contracted, long-exserted, 2″–6″ long: spikelets 1″ long.—Not uncommon in rocky woods. September–October.

**2. M. Mexicana** (L.) Trin. Much branching, $1\frac{1}{2}$°–3° high, with geniculate culms: panicles both lateral and terminal, contracted, with appressed spike-like branches, more or less included: spikelets $1\frac{1}{2}''$ or more long; hairs at base of flowering glume few, short: empty glumes equal or very unequal, longer or shorter than the flowering glume.—Common in low woods along streams. August–October.

**3. M. polystachya** Mackenzie & Bush, n. sp. 2° high, erect, much branched: leaves $1\frac{1}{2}'$–$2\frac{1}{2}'$ long, 1″–2″ wide: panicles on peduncles 1′–5′ long, long-exserted, 2′–4′ long, densely flowered, the lower branchlets separated: flowers nearly sessile, 1″ long: the glumes as in the last: hairs at base of flowering glume copious, $\frac{1}{3}$ to $\frac{1}{2}$ length of glume.—Open rocky woods east of Sibley. August–October.

**4. M. racemosa** (Michx.) B.S.P. Culms 1°–3° high, usually much-branched: panicle terminal, 2′–4′ long, usually dense and spike-like, exserted, the branches very densely flowered.—Bogs and wet rocky woods. Well distributed and rather common. August–October.

**5. M. tenuiflora** (Willd.) B.S.P. Distinguished from No. 7 only by its shorter less acuminate, empty glumes.—Dry woods near Sibley. August–October.

**6. M. diffusa** Willd. NIMBLE WILL. Culms much-branched, diffusely spreading or prostrate with numerous short leaves: panicles slender and contracted, 2′–4′ long, usually interrupted.—Often very common in dry woods. August–October.

**7. M. sylvatica** Torr. Culms ascending, 1°–3° high, bearing a contracted panicle 3′–6′ long.—Common in low woods along the larger streams. July–October.

### 18. BRACHYELYTRUM Beauv.

Perennial with erect, pubescent culms and one-flowered spikelets in simple panicles. Glumes three, the first two small and inconspicuous, the outer often wanting. Flowering glume hard, 5-nerved, hairy, long awn-pointed, together with the palet enclosing the grain. Palet as long

as the flowering glume, with a groove on the back, in which lies an awn-like pedicel about one half its length.

1. **B. erectum** (Schreb.) Beauv. LONG-AWNED WOOD-GRASS. Occurs locally in rocky shaded woods near Dodson, Tarsney and Sibley.

### 19. PHLEUM L.

Annuals. Glumes three, the two outer equal, keeled and compressed, truncate at the apex and awned. Flowering glume hyaline, truncate and erose at the summit.

1. **P. pratense** L. TIMOTHY-GRASS. Erect, 1°–3° high, bearing a long cylindric spike 2′–6′ long : lower glumes ciliate, bearing a short awn.—Very common in meadows, along railroads, etc. June–August.

### 20. ALOPECURUS L.

Scales three, the two lower compressed and keeled, about equal, thin, delicate and ciliate. Third scale hyaline, with a delicate awn on the back, about the length of the empty glumes. Palet thin or wanting.

1. **A. geniculatus** L. MARSH FOX-TAIL GRASS. Culms tufted, about 1° high : upper sheath inflated, often partly enclosing the spike : spikes 2′–3′ long : flowering glume awned from near its base, the awn conspicuously exserted.—Often common in low wet fields, especially from Adams to Levasy. May–June.

Var. **fulvus** (J. E. Smith) Scribn. Awn very delicate, short, barely exserted.—Occasionally found along the Missouri River. May–June.

### 21. SPOROBOLUS R. Br. RUSH GRASS. DROP-SEED GRASS.

Spikelets in open or spike-like panicles, one-flowered, rarely two-flowered. Glumes three, membranous, the outer two empty, shorter than the third. Palet similar. Grain free and early deciduous in most species. Leaves long and involute.

Panicle spike-like.
  Culms stout, 2°–5° high. 1. *S. compositus.*
  Culms slender, 1½° or less high.
    Spikelets 2″ long. 2. *S. vaginaeflorus.*
    Spikelets 1½″ long.
      Sheaths inflated. 3. *S. neglectus.*
      Sheaths not inflated. 4. *S. cuspidatus.*
Panicle open and with spreading branches.
  Culms erect; pedicels not longer than spikelets.
    Grain 1″ in diameter, very conspicuous. 5. *S. heterolepis.*
    Grain not conspicuous.
      Panicle branches widely spreading. 8. *S. airoides.*
      Panicle branches erect ascending.
        Sheaths densely pilose at summit. 7. *S. cryptandrus.*
        Sheaths very sparingly hairy. 6. *S. argutus.*
  Culms decumbent; pedicels capillary. 9. *S. asperifolius.*

1. **S. compositus** (Poir.) Merrill. Stout, tufted perennial : leaves involute, 6′–18′ long : panicle partly included in the upper sheath, 6′

long : spikelets 2″–2½″ long : third scale of the spikelet acutish, as long as the palet, and somewhat exceeding the second.—Common in dry grounds throughout. July–October.

**2. S. vaginaeflorus** (Torr.) Wood. Tufted, slender, 6′–12′ high : leaves 2′–4′ long, broad at base and attenuate into a long involute point : sheaths somewhat inflated, the upper partially enclosing the few-flowered simple panicle : spikelets 2″–2½″ long, the three scales nearly equal in length, or the outermost slightly shorter and exceeded by the acutely tipped palet.—In dry soil near Kansas City, Courtney and Levasy. Not common. August–October.

**3. S. neglectus** Nash. 6′–18′ high, much branched and spreading : leaves long, involute, with conspicuously inflated sheaths : panicles small and numerous, more or less enclosed in the sheaths : spikelets less than 2″ long, the acute palet slightly longer than the acute third scale : second scale slightly longer than the first and shorter than the third.—Often common in dry ground and well distributed. August–October.

**4. S. cuspidatus** (Torr.) Wood. 18′ or less high, branching : leaves long, involute : panicles 2′–4′ long, exserted : scales long-acuminate or cuspidate.—On dry rocky hills north of Roanoke, Kansas City and at Swope Park. August–September.

**5. S. heterolepis** A. Gray. Culms stout, 3° high : leaves 1° long, involute : panicle long exserted, 6′ long and 1′ wide, its branches short and ascending : spikelets 2½″ long.—Common on the prairie between Lee's Summit and Greenwood ; also near Buckner. August–October.

**6. S. argutus** (Nees) Kunth. 1° high : leaves broad and rather short : sheaths hairy at the throat : panicle 2′–3′ long with ascending verticillate branches : spikelets very small, ¾″ long, the first scale one-quarter the length of the second and third, which are equal.—One clump found as a waif near Westminster (Kansas City) along the Belt Line. July–August.

**7. S. cryptandrus** (Torr.) A. Gray. Culms 2° high, densely tufted : leaves linear, 6′ long : sheaths very hairy at the mouth : panicle long, narrow and slender, usually more or less included : branches ascending, scattered or subverticillate : spikelets 1″ long, about as in the last.—Sandy bottoms along the Missouri River. Not uncommon. July–September.

**8. S. airoides** Torr. 2½° high : leaves flat, attenuate to a long involute point, sparingly hairy at base : panicle 9′ long, very compound with widely spreading branches : spikelets 1″ long, the second and third glumes equal and twice the length of the first.—Sparingly introduced in the railroad yards at Sheffield. June.

**9. S. asperifolius** Nees & Meyen. Culms about 6′ high from a decumbent base ; panicle 2′–4′ long, partly included, ascending, the branches scabrous : spikelets on long capillary pedicels many times their length :

spikelets $\frac{1}{2}''$ long.—Sandy fields in the Missouri Bottom near Courtney. Local. August–September.

### 22. CINNA L.

Glumes three, the third bearing a short awn. Palet 1-nerved.

**1. C. arundinacea** L. Wood Reed-grass. Perennial 2°–4° tall: leaves flat, 6′ long: panicle about 6′ long, its branches densely flowered, spreading: spikelets $2\frac{1}{2}''$ long.—Common in moist woods and meadows. July–September.

### 23. AGROSTIS L.

Outer glumes about equal or the lowest the longer. Flowering glumes and palet hyaline, the latter often very small or wanting. Seed adherent to pericarp.

Culms erect.
- Branches of panicle branching below the middle. 1. *A. alba.*
- Branches of panicle branching above the middle. 2. *A. hyemalis.*

Culms weak and decumbent. 3. *A. perennans*

**1. A. alba** L. Red-top Grass. Culms erect or ascending, sometimes decumbent at base, 1°–3° high, smooth: panicle 4′–10′ long, contracted or open, and with ascending or spreading branches: spikelets slightly more than 1″ long: palet one-third the length of the third glume.—Common in wet meadows and fields. May–July.

**2. A. hyemalis** (Walt.) B.S.P. Hair-grass. Culms densely tufted, 1°–2° high, slender: leaves 1′–2′ long: panicle branches capillary and scabrous, at first erect, at length widely spreading and much branched: spikelets 1″ long or less: palet very small.—Common. May–June.

**3. A. perennans** (Walt.) Tuckerm. Thin-grass. Culms 6′–2° long: leaves 3′–4′ long: panicle 2′–8′ long, pale green, diffusely spreading, its branches divided below the middle: spikelets 1″ long or less: palet small or wanting.—A delicate grass growing in moist woods throughout. Not uncommon. August–September.

### 24. CALAMAGROSTIS Adans. Reed-grass.

Perennials. Rachilla produced beyond the palet and hairy. Glumes three, the two outer empty, keeled, membranous and about equal, the third shorter and copiously hairy at base, short-awned.

- Panicle open with spreading branches. 1. *C. Macouniana.*
- Panicle narrow and strict, branches erect. 2. *C. inexpansa.*

**1. C. Macouniana** Vasey. 2°–4° high: panicle 5′–6′ long, $1\frac{1}{2}'$–2′ wide, the longer branches 2′ long, slender, straw-colored: spikelets $1\frac{1}{4}''$ long, the outer glumes acute, the second slightly longer than the first: hairs copious, the length of the third scale, which bears a delicate straight awn.—Wet meadows in the Little Blue Valley from Buckner and Lake City to Atherton. Locally rather common. May–July.

**2. C. inexpansa** A. Gray. 1½°–3° high, stout: panicle long, its branches short and erect: spikelets straw-colored, 1½″–2″ long, the basal hairs about the length of the third glume: awn slightly bent, about the length of the glume.—Of rare occurrence in low woods along the Missouri River near Courtney. June–July.

### 25. CALAMOVILFA Hack.

The rachilla not produced, the outer glumes unequal, and the third glume not awned. Otherwise much as in *Calamagrostis*.

**1. C. longifolia** (Hook.) Hack. REED-GRASS. Glabrous perennial with long creeping rootstocks, 4°–6° high: panicle 10′ long, narrow, interrupted at base, its branches erect: spikelets 2½″–3″ long.—In one locality in the sandy Missouri River bottom near Atherton; also near Harlem, Clay County, Missouri. August.

### 26. APERA Adans.

An annual with one-flowered spikelets in an open panicle. Rachilla produced beyond the flower in the form of a bristle. Flowers much as in *Agrostis*, but the third glume two-toothed and bearing a long slender awn. Palet a little shorter, two-toothed.

**1. A. Spica-venti** (L.) Beauv. BENT-GRASS. 1°–2° tall, with a panicle 4′–8′ long, its branches capillary: spikelets ¾″–1¼″ long, the delicate awn 3″–4″ long.—Very sparingly adventized along the railroad from Courtney to Sheffield. June–July.

### 27. HOLCUS L.

Spikelets 2-flowered in close panicles. Glumes four, the two lower empty, the first and second three-nerved, the third awnless, enclosing a perfect flower, the fourth bearing a short bent awn and enclosing a staminate flower.

**1. H. lanatus** L. VELVET-GRASS. A softly pubescent annual, 1½°–2½° high: panicle dense, 2′–3′ long: spikelets 2″ long.—Rarely occurs as a waif along railroads at Sheffield. July.

### 28. TRISETUM Pers.

Perennials with 2–4-flowered spikelets in open panicles. Two lower glumes empty, the flowering two-toothed and bearing a short bent or flexuous awn below the apex. Palet two-toothed. Rachilla extending beyond the flowers.

**1. T. flavescens** (L.) R. & S. FALSE OATS. 1½°–2½° high, smooth: panicles 2′–5′ long, yellowish, open, the branches naked below: spikelets 3–4 flowered.—Sparingly adventized along railroads from Courtney to Sheffield. July–August.

### 29. AVENA L.

Lower flowers perfect, upper imperfect. Two lower scales large, empty, membranous and persistent. Flowering glumes firmer in texture, two-toothed. Palet narrow.

1. **A. sativa** L. Oats. Annual, 2°–4° high : leaves flat : panicle contracted or with widely spreading branches : spikelets 9″ long, 2-flowered, the two empty glumes acute, scarious at apex and longer than the flowers : perfect flower long-awned or awnless.—Frequent in waste places, and often very abundant along railroads. May–October.

### 30. SPARTINA Schreb.

Tall perennials from long creeping rootstocks. Spikelets 1-flowered. Glumes three, the two outer empty and unequal, the third subtending the flower. Palet often larger than the glume.

1. **S. cynosuroides** (L.) Willd. Marsh-grass. 3°–6° high : leaves involute, pointed, 1° or more long : spikes 5–25, 2′–5′ long, short-peduncled : rachis and glumes rough on the margins : spikelets closely imbricated, 6″–7″ long : outer glumes awn-pointed.—On wet prairies throughout the county, but especially abundant from Adams to Levasy. July–October.

### 31. SCHEDONNARDUS Steud.

A decumbent annual with short leaves, 1-flowered spikelets, sessile and appressed, in spikes. Glumes three, the two outer empty, acuminate and keeled, the third somewhat longer, but similar. None awned.

1. **S. paniculatus** (Nutt.) Trelease. 1°–2° high : inflorescence scabrous, taking up three-fourths of the plant : spikes 6–10, distant, 1′–4′ long, widely spreading.—Locally common in barrens at Dodson and Little Blue Tank ; also occasionally adventized along railroads. June–July.

### 32. BOUTELOUA Lag. Mesquite Grass.

Rachilla produced beyond the flower, bearing awns and scales. Lower glumes keeled. Flowering glume three-toothed and awned or pointed. Palet 2-nerved and 2-toothed.

| | |
|---|---|
| Spikelets one to four. | 1. *B. oligostachya*. |
| Spikelets twenty to sixty. | 2. *B. curtipendula*. |

1. **B. oligostachya** (Nutt.) Torr. Culms about 1° high : leaves 3′–4′ long, with a long slender tip : spikes usually two, about 1′ long, curved, oblong-linear, many-flowered, short-peduncled.—Sparingly adventized along railroads, especially at Sheffield. June–August.

2. **B. curtipendula** (Michx.) Torr. Culms 2°–3° high : leaves 7′–10′ long, tapering to a long slender point : spikes 3″–8″ long, spreading or reflexed.—Common in rocky barrens in the southern part. August–October.

### 34. BECKMANNIA Host.

Tall grasses with 1–2-flowered spikelets, borne in close spikes in narrow terminal panicles. Glumes three or four, the two lower saccate, the flowering glumes narrower and lanceolate. Palet hyaline.

**1. B. erucaeformis** (L.) Host. RATTLESNAKE GRASS. Panicle 6′ long : spikes 12″ long or less : spikelets 1-flowered, 1″ long.—One plant found on the river bank near Courtney. June–July.

### 34. ELEUSINE Gaertn.

Spikelets several-flowered, closely imbricated in two rows on one side of the rachis, thus forming spikes of which there are several close together at the top of the culm. Glumes awnless, keeled, the two lower empty, the upper flower-bearing.

**1. E. Indica** (L.) Gaertn. YARD GRASS. A decumbent or erect annual, 2° or less tall : spikes 3–6, 2′–4′ long, spreading : spikelets about 2″ long, 3–6-flowered.—A common weed in waste places throughout. July–October.

### 35. LEPTOCHLOA Beauv.

Spikelets alternate in two rows on side of a long filiform rachis, forming loosely-flowered spikes, the spikes racemed Spikelets 2-many-flowered. Two lower glumes empty, keeled. Flowering glume 3-nerved, longer than the palet.

**1. L. attenuata** Nutt. 8′–3° high, with numerous flat, sparingly villous leaves : spikes 20–60 : spikelets about 3-flowered, 1″ long : empty glumes strongly mucronate, usually exceeding the flower : nerves of flowering glumes sparsely pubescent.—In damp soil in the Missouri River bottoms from Sheffield to Sibley ; Dodson. Rather uncommon. August–October.

### 36. PHRAGMITES Trin.

Tall reed-like perennials with long running rootstocks and with numerous broad flat leaves. Spikelets in a large terminal panicle, 3–7-flowered. Two lower glumes empty and unequal, the third either neutral or staminate, the remaining flowers perfect. Small palets and flowering glumes slender and membranous.

**1. P. communis** Trin. REED. 5°–20° high : panicle often 1° long, with ascending branches.—In low grounds, along the Missouri River. Uncommon and usually not flowering. August–October.

### 37. SIEGLINGIA Bernh.

Terminal flower often sterile. Two lower glumes empty, keeled. Flowering glume rounded, three-nerved, with nerves hairy, and three-toothed at the apex, the nerves, especially the mid-nerve, excurrent as small awns. Palet broad, 2-keeled.

Panicle large and spreading, with numerous spikelets. 1. *S. sesleriοides.*
Panicle small and simple, few-flowered. 2. *S. purpurea.*

**1. S. sesleriοides** (Michx.) Scribn. TALL RED-TOP GRASS. A showy perennial, 3°–5° high, with long pointed narrow leaves : panicle 9′–15′ long : spikelets purple, 3″–4″ long, about 6-flowered.—Common in dry open grounds throughout. July–September.

**2. S. purpurea** (Walt.) Kuntze. SAND-GRASS. A tufted annual, about 1° high: leaves short, sparingly ciliate: panicle ½′–2′ long.—In sand in the Missouri River bottom at Courtney. Common in one locality. Also occurs at Quindaro, Kansas. July–September.

### 38. DIPLACHNE Beauv.

Spikelets several-flowered, sessile on the rachis, forming slender spikes. Two lower glumes empty, keeled, acute, unequal. Flowering glumes longer, 1–3-nerved, 2-toothed and mucronate between the teeth.

| | |
|---|---|
| Spikelets 2″–4″ long. | 1. *D. fascicularis.* |
| Spikelets 5″–6″ long. | 2. *D. acuminata.* |

**1. D. fascicularis** (Lam.) Beauv. A decumbent or ascending annual, 1°–3° high: spikes panicled, partly enclosed in upper sheath: spikelets 3″–5″ long, 5-11-flowered.—Often common on muddy shores in low grounds. June–October.

**2. D. acuminata** Nash. Resembles the last, but spikelets longer, the flowering scales acuminate, entire (obtuse and two-toothed in *D. fascicularis*).—Often common on mud-flats, especially at Courtney. June–September.

### 39. ERAGROSTIS Beauv.

Spikelets paniculate, 2-many-flowered, flattened. Two lower glumes empty, short and keeled, 1-nerved. Flowering glumes keeled, 3-nerved, not pilose at base. Palet 2-nerved, persistent on the rachis after the rest of the flower has fallen.

| | |
|---|---|
| Culms creeping and rooting. | 1. *hypnoides* |
| Culms ascending or erect. | |
| Spikelets large and flat, forming a narrow crowded panicle. | 2. *E. major.* |
| Panicle open, its branches capillary. | |
| Culms 1½° high or less. | |
| Spikelets 5-many-flowered. | 3. *E. Purshii.* |
| Spikelets 2–5-flowered. | |
| Culms much-branched. | 4. *E. Frankii.* |
| Culms sparingly branched. | 5. *E. capillaris.* |
| Culms 1½° or more high. | |
| Spikelets yellowish, usually 3–5-flowered. | 6. *E. trichodes.* |
| Spikelets purplish, usually 6–10-flowered. | 7. *E. pectinacea.* |

**1. E. hypnoides** (Lam.) B.S.P. Annual, forming large patches leaves short, 6″–18″ long: flowering branches 2′–5′ high: spikelets dioecious, 10–30-flowered, 2″–8″ long, clustered.—Common along streams, especially along the Missouri River. June–October.

**2. E. major** Host. 6′–2½° high: leaves flat, sharp-pointed, 4′–6′ long: panicle 2′–6′ long, 1½′–2½′ wide: spikelets lance-oblong, 3″–6″ long, 1½″ wide, usually 8–20-flowered.—Common in waste places. July–October.

**3. E. Purshii** Schrad. Densely-tufted and much branching, 3′–18′ high: leaves about 2′ long: panicle from 1′–10′ long, its branches loose

and spreading: spikelets 2″–4″ long, linear-oblong: flowering glumes with prominent lateral nerves.—Common in dry soil, especially on sandbars along the Missouri River. June-October.

**4. E. Frankii** Steud. Strongly tufted and much branched throughout, 3′–12′ high: leaves 2′–5′ long: panicle 2′–6′ long, 1′–2′ wide: spikelets 1″–1½″ long.—Often common in damp sandy fields along rivers. June–October.

**5. E. capillaris** (L.) Nees. Erect, 8′–18′ tall, branching only at base: leaves 3′–8′ long: sheaths smooth or hairy: panicles often 1° long and 6′ wide with widely spreading capillary branches: spikelets somewhat terete, 1″–1½″ long.—Common in dry soil throughout. A form with most of the spikelets 1-flowered occurs south of Grain Valley. July–September.

**6. E. trichodes** (Nutt.) Nash. 2°–4° high, with long, narrow usually smooth leaves: panicle narrow and elongated, sparingly bearded in the lower axils, 1° or more long, 3′–4′ wide, its branches ascending and capillary, somewhat flexuous: spikelets 2½″ long.—Sandy grounds in Rush Bottom near Courtney. Local and uncommon. July–September.

**7. E. pectinacea** (Michx.) Steud. 1½°–2½° high, with the panicle taking up two-thirds of the plant: leaves about 6′ long: sheaths hairy: panicle 8′ or more long, 6′ or more wide, strongly bearded in the axils, its branches spreading: spikelets 2″–4″ long, on pedicels at least their length.—Frequent in sandy fields and prairies and adventized along railroads. July–September.

## 40. EATONIA Raf.

Spikelets small, about 2-flowered, in contracted panicles. Two lower glumes empty, very dissimilar, the first acute, linear, keeled and 1-nerved, the second strongly obovate, rounded or acute at the apex, 3-nerved. Flowering glumes narrower, obtuse, keeled. Palet small and hyaline, 2-nerved.

Panicle branches narrowly linear and loosely flowered. 1. *E. Pennsylvanica.*
Panicle branches short and thick, closely flowered. 2. *E. obtusata.*

**1. E. Pennsylvanica** (DC.) A. Gray. 1½°–3° high, with numerous flat leaves, 2′–6′ long: panicle narrow, slender and loosely flowered, 3′–12′ long, its branches short.—Often common in rich moist woods, especially in the northern part. May–June.

**2. E. obtusata** (Michx.) A. Gray. Very erect, 1°–2° high, growing in small clumps: leaves 3′–5′ long, sharp-pointed: panicle 2′–4′ long, densely flowered and spike-like, but interrupted at base: branches 1′ or less long, erect.—Common in dry soil throughout, in woods and on prairies. May–June.

### 41. KOELERIA Pers.

Spikelets 2–5-flowered. Two lower empty glumes narrow, keeled, acute and unequal in length. Flowering glumes obscurely 3–5-nerved. Palet hyaline, 2-nerved.

**1. K. cristata** (L.) Pers. Culms tufted, 1°–2° high · panicle spike-like, long-peduncled, 2′–4′ long, 6″ wide : branches very short and compactly flowered : spikelets 2″ long.—Rocky prairies near Lee's Summit and rarely found along railroads. May–June.

### 42. MELICA L.

Perennial grasses with 2–8-flowered spikelets in open panicles. Glumes with broad, scarious margins or the lower scarious throughout, the lower empty glumes 3–5-nerved, the upper flowering ones 7–13-nerved. Rachilla extending beyond the flowers, and bearing several small scales convolute around each other.

**1. M. diffusa** Pursh. MELIC GRASS. 2°–4° high : panicle 4′–8′ long, its branches spreading, ascending or erect : spikelets usually 3-flowered, 4½″–5″ long, with scabrous flowering glumes.—In rocky woods especially in the southern part. Well distributed and very abundant locally. May–June.

### 43. KORYCARPUS Zea.

Perennial with running rootstocks and long flat leaves. Spikelets in a very simple panicle, 3–4-flowered. Two lower glumes empty, acute and coriaceous, much shorter than the flowers. Flowering glumes rounded, shortly mucronate, coriaceous and shining, but with a narrow scarious margin. Uppermost glumes empty and convolute.

**1. K. diandrus** (Michx.) Kuntze. 2°–4° high.—Rich woods along the bluffs three miles west of Sibley. Not uncommon locally. July.

### 44. UNIOLA L.

Spikelets flat and two-edged in panicles, several–many-flowered, 3–6 of the lower glumes empty, the flowering glumes much-keeled and many-nerved. Uppermost glumes often smaller and empty. Palets sharply 2-keeled, half the size of the glume.

**1. U. latifolia** Michx. SPIKE GRASS. 2°–5° high : panicle about 6′ long, one-sided, its branches spreading or pendulous : spikelets 7″–10″ long, 6″–8″ wide, oblong, 5–10-flowered, very flat, on long capillary often drooping pedicels.—In rocky woods. Local. Swope's Park to south of Dodson, Little Blue Tank and Sibley. August–October.

### 45. DISTICHLIS Raf.

Dioecious perennials with many-flowered spikelets in a dense spike-like panicles. Leaves flat at base but involute, pointed. Spikelets compressed. Glumes coriaceous, the two lower empty, keeled, few-nerved, shorter than the broader, acute, many-nerved flowering ones. Palet two-keeled.

**1. D. spicata** (L.) Greene. SPIKE-GRASS. Flowering culms 5′ high, the sterile much taller, rigid and very leafy : spikelets clustered, 7–12, ovate-lanceolate, 8″ long, 2½″ wide, 8–12-flowered.—A large patch of the pistillate plants adventized in the railroad yards at Sheffield. Our form is var. *stricta* Scribn. May–June.

## 46. DACTYLIS L.

Spikelets 3–5-flowered in one-sided clusters in a dense panicle. Two lower glumes empty, scarious-margined, mucronate-pointed, unequal, the flowering 5-nerved, larger and short-awned or mucronate. Palet shorter, 2-keeled.

**1. D. glomerata** L. ORCHARD GRASS. A rough perennial 2°–4° high : panicles 5′–8′ long, its branches naked at base : spikelets 4″ long, in dense clusters, 3–5-flowered.—Often planted and frequently found in waste places, yards and meadows throughout. May–June.

## 47. POA L. MEADOW GRASS.

Spikelets compressed, 2–10-flowered, paniculate. Glumes keeled, the two empty ones shorter than the flowers, 1–3-nerved. Flowering glumes scarious margined, 5-nerved, usually with a tuft of cobwebby hairs at base, and the chief nerves pubescent. Palet shorter, 2-nerved.

Annuals less than 12′ high.
- Flowering glumes cobwebby at base. — 1. *P. Chapmaniana.*
- Flowering glumes not cobwebby at base. — 2. *P. annua.*

Perennials, more than 12′ high.
- Culms flattened. — 3. *P. compressa.*
- Culms terete, panicle branches erect. — 4. *P. nemoralis.*
- Culms terete, panicle branches spreading.
  - Panicle branches 2–6 together.
    - Spikelets shorter than pedicels.
      - Flowering glumes obscurely nerved. — 5. *P. flava.*
      - Flowering glumes strongly nerved.
        - Flowering glumes silky-pubescent. — 6. *P. pratensis.*
        - Flowering glumes not silky-pubescent. — 7. *P. trivialis.*
    - Spikelets exceeding pedicels. — 8. *P. sylvestris.*
  - Panicle branches 1–2 together. — 9. *P. Wolfii.*

**1. P. Chapmaniana** Scribn. SOUTHERN SPEAR-GRASS. Tufted, 3′–12′ high, erect : panicle 1′–4′ long : spikelets 1½″ long, 3–7-flowered : flowering glume 1¼″ long, cobwebby at base, rather obscurely 3–5-nerved, the nerves pilose.—Common in sandy soil. April–May.

**2. P. annua** L. SPEAR-GRASS. Like the last but ascending or spreading : flowering glumes distinctly 5-nerved and not cobwebby at base.—Sparingly adventized at Courtney. May–July.

**3. P. compressa** L. WIRE GRASS. Culms 12′–20′ high, flattened, from long spreading rootstocks : panicle 1½′–3′ long, 3″–6″ wide: branches ascending, spikelet-bearing throughout : spikelets 1½″ long, 3–10-flowered: flowering glume 3-nerved, sparingly pubescent on the nerves toward the base.—In waste places. Well distributed but not common. June–August.

**4. P. nemoralis** L. Culms 20′–30′ high, erect, simple and glabrous: panicle slender, 5′–8′ long, its branches erect or ascending, 1′–3′ long: spikelets 1½″ long, 2–4-flowered: flowering glumes cobwebby at base and hairy on the mid and marginal nerves below the middle.—Sparingly adventized in moist ground along the railroads at Sheffield and Courtney. May–July.

**5. P. flava** L. MEADOW GRASS. Culms 2°–3° tall, in clumps: sheaths smooth: panicle open with spreading branches, 8′–15′ long: spikelets 2–4-flowered, 1½″ long, short-pedicelled: flowering glumes obscurely 5-nerved, the mid and marginal nerves hairy below.—In wet grounds. Not common. Springy places at Burge Park. May.

**6. P. pratensis** L. KENTUCKY BLUE-GRASS. Culms 10′–3½° tall, erect, from long running rootstocks: panicle 1′–8′ long, usually pyramidal, its branches erect, ascending or spreading: spikelets 3–5-flowered, short-pedicelled or nearly sessile, 1½″–2½″ long: flowering glume 5-nerved, cobwebby at base and hairy below on the keel and margin. Very common in all kinds of situations throughout. April–June.

**7. P. trivialis** L. ROUGH MEADOW GRASS. Culms 1°–3° high: sheaths and leaves very rough: panicle 4′–6′ long: spikelets usually 2-flowered, 1½″ long: flowering glumes strongly 5-nerved, only the mid-nerve hairy.—Sparingly adventized at Courtney. June-August.

**8. P. sylvestris** A. Gray. WOOD GRASS. Culms weak, 1°–3° high, erect: panicle 4′–7′ long, its branches ascending to reflexed: spikelets 1″–1¼″ long, 2–3-flowered: flowering glumes plainly 5-nerved, cobwebby and persistent below.—Common in woods throughout. May–June.

**9. P. Wolfii** Scribn. Culms tufted, 2°–2½° high: panicle 3′–4′ long, its branches ascending, rather few-flowered: spikelets 2″–3″ long, 2–4-flowered: flowering glumes cobwebby at base, the mid and marginal nerves pubescent for three-fourths of their length.—Common in dry woods in one locality on the Blue River Bluffs opposite the mouth of Brush Creek. April–May.

### 48. PANICULARIA Fabr. MANNA GRASS.

Spikelets paniculate, terete or flattish, several-many-flowered. Two lower glumes empty, the flowering glumes rounded, 5–9-nerved, scarious at the apex. Palets 2-keeled.

Spikelets 1″–1½″ long, oblong. 1. *P. nervata.*
Spikelets 6″ or more long, linear. 2. *P. fluitans.*

**1. P. nervata** (Willd.) Kuntze. Culms erect, 2°–3° high: panicle 5′–8′ long, its branches at first erect, then spreading, and finally drooping: spikelets 3–7-flowered, very readily breaking up at maturity.—Common in wet places throughout, but especially in the northern part. May–July.

**2. P. fluitans** (L.) Kuntze. Culms flat, large and stout, 1°–5° long, erect or decumbent: panicle 1° long with erect or spreading branches: spikelets 7–13-flowered.—Low grounds west of Buckner. May–August.

### 49. FESTUCA L. Fescue Grass.

Spikelets 2-several-flowered, paniculate or racemose. Two lower glumes empty, keeled. Flowering glumes 3-nerved, rounded on the back, acute or awned. Palet a little shorter, usually adhering to the grain at maturity.

| | |
|---|---|
| Flowering glumes awned; annuals. | 1. *F. octoflora.* |
| Flowering glumes not awned; perennials. | |
| Spikelets 4½″ or more long. | 2. *F. elatior.* |
| Spikelets 3″ or less long. | |
| Spikelets obovate, crowded at the ends of the branches. | 3. *F. obtusa.* |
| Spikelets lanceolate, not crowded at the ends of the branches. | 4. *F. nutans.* |

**1. F. octoflora** Walt. Culms erect, tufted, 4′–18′ high: leaves 1′–2′ long, bristle-form: panicle simple and spike-like, 1′–3′ long: spikelets flat, oblong, 2½″–4″ long, 6–13-flowered.—Frequent in dry, sandy soil, especially in bottoms along the Missouri River. May.

**2. F. elatior** L. Meadow Fescue. Culms 1°–3° high, erect, glabrous: leaves numerous, 2′–15′ long: panicle simple or compound with short, erect, crowded branches 4′–14′ long: spikelets 5–8-flowered, 4½″ or more long: flowering glumes obscurely 5-nerved, scarious margined, acutish.—Common in waste places, streets, along railroads, etc. June–August.

**3. F. obtusa** Spreng. Spikelets crowded at the ends of the widely spreading branches of the large panicle, 2½″–3″ long: flowering glumes 2″ long, obtuse. Otherwise like the next from which, however, it is very different in aspect.—Woods and prairies. Widely distributed in the southern part, but not common. June–July.

**4. F. nutans** Willd. Culms 1½°–3° tall, erect, glabrous or sometimes pubescent: leaves 1½″–3″ wide, 4′–10′ long: panicle very scabrous, 4′–10′ long, the branches erect or spreading in age, flower-bearing at the extremities: spikelets 3–5-flowered: flowering glumes 2″ long, acute.—Common in rich, rocky woods. May–June.

### 50. BROMUS L. Chess.

Spikelets borne in terminal panicles, 5–many-flowered. Empty glumes 1–3-nerved, acute. Flowering glumes 3–9-nerved, rounded or compressed, keeled on the back, apex mostly 2-cleft, and usually awned below the summit. Grain adhering to the two-keeled palet, which is shorter than the scale. Styles attached below the apex of the ovary.

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|---|---|
| Lower empty glume 1-nerved, upper 3-nerved. | 1. *B. purgans.* |
| Lower empty glumes 3-nerved, upper 5–9-nerved. | |

| | |
|---|---|
| Flowering glumes hairy. | 2. *B. hordeaceus.* |
| Flowering glumes smooth. | |
| Awns the length of the glumes. | |
| Leaves and sheaths hairy. | 3. *B. racemosus commutatus.* |
| Leaves and sheaths densely whitish pubescent. | 4. *B. arvensis.* |
| Awns shorter than the glumes. | 5. *B. secalinus.* |

**1. B. purgans** L. WILD CHESS. Culms erect, 2°–4° high: whole plant more or less pubescent: panicle 5′–10′ long, the branches erect, spreading or drooping: spikelets 6″–12″ long, 5–10-flowered: flowering glumes densely appressed-pubescent all over, and bearing an awn 2″–4″ long.—Common in rocky woods. May–July.

Var. **incanus** Shear. GRAYISH WILD CHESS. Culms tall and very leafy: sheaths overlapping and densely soft pilose-pubescent.—Along Little Blue River in low land. July–August.

**2. B. hordeaceus** L. SOFT CHESS. 1°–3° high, pubescent all over: panicle often somewhat nodding: flowering glumes 4½″ or less long, prominently nerved, bearing an awn of their own length.—Sparingly adventized along railroads at Sheffield. June.

**3. B. racemosus commutatus** Hook. f. FALSE CHESS. LARGER CHEAT GRASS. Closely resembles *B. secalinus*, but it is reflexed hairy on the sheaths: flowering glumes plainly nerved, 4″–5″ long and bearing an awn of their own length.—In similar situations as *B. secalinus*, but much less common. May–June.

**4. B. arvensis** L. FIELD CHESS. Culms erect, 1°–3° high: sheaths and leaves softly and densely pubescent: panicle 5′–9′ long, simple, its branches widely spreading or ascending, bearing 1–3 spikelets above the middle, the longer often 5′ long: spikelets over 9″ long, lanceolate, 8–12-flowered.—Sparingly adventized along railroads at Sheffield. June.

**5. B. secalinus** L. CHESS. An erect annual, 1°–3° high: sheaths glabrous: panicle 3′–8′ long, the branches ascending: spikelets 9″ or less long, 5–11-flowered, erect or somewhat pendulous: flowering glumes obscurely nerved, 3″–4″ long, bearing a more or less flexuous awn 4″ or less long, or sometimes awnless.—Common in fields and waste places. May–June.

### 51. LOLIUM L.

Spikelets flattened, several–many-flowered, sessile and solitary at each join of the continuous rachis, the edges turned towards the rachis. Flowering glume rounded, 5–7-nerved.

**1. L. perenne** L. RYE GRASS. A smooth erect perennial, 1°–2½° high: spikes 3′–9′ long: spikelets 5–10-flowered, 4″–6″ long, the empty glumes strongly nerved and shorter than the flower: flowering glumes acute.—Rarely adventized along railroads from Courtney to Sheffield. May–June.

Var. **Italicum** (R. Br.) Scribn. Flowering glumes bearing awns of their own length.—With the species.

### 52. AGROPYRON Gaertn. Couch Grass.

Spikelets 3-many-flowered, sessile and alternate at each joint of the continuous rachis. Two lower glumes empty, the flowering 5–7-nerved, rounded on the back and usually short-awned.

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|---|---|
| Plants with running rootstocks. | |
| Plants glaucous; spikelets divergent. | 1. *A. occidentale.* |
| Plants green; spikelets appressed. | |
| Empty scales much shorter than the flowering. | 2. *A. repens.* |
| Empty scales almost equal to the flowering. | 3. *A. pseudorepens.* |
| Plants without running rootstocks. | |
| Awns shorter than flowering glumes. | 4. *A. tenerum.* |
| Awns as long as flowering glumes. | 5. *A. caninum.* |

**1. A. occidentale** Scribn. & Smith. 2°–3° high: leaves involute when dry, smoothish beneath, scabrous above: spike 4′–7′ long: spikelets 6″–9″ long, 6–10-flowered: glumes acuminate or short-awned.—Commonly introduced along railroads, where it occurs in great beds. June–July.

**2. A. repens** (L.) Beauv. 2°–4° high: leaves flat, 7′–10′ long, rough above, smooth beneath: spike 5′–11′ long: rachis slightly hispid to pubescent: spikelets 6″ long, 3–7-flowered: the glabrous glumes short-awned.—Adventized along railroads, especially at Lee's Summit where a peculiar pubescent forms occurs. June–July.

**3. A. pseudorepens** Scribn. & Smith. Resembles the last, but the leaves are rough on both sides and the empty glumes nearly equal the flowering ones.—Sparingly adventized at Courtney and Sheffield. July–August.

**4. A. tenerum** Vasey. 1½°–2½° high: leaves narrow and rough: spike slender, 3′–6′ long, the few-flowered spikelets appressed to the rachis, 4″–7″ long: empty glumes 5-nerved, acute, the flowering acuminate or short-awned.—Rarely adventized at Sheffield. June–July.

**5. A. caninum** (L.) R. & S. 1°–3° high: lower sheaths often pubescent: leaves rough above, smooth beneath: spikes densely flowered, 4′–7′ long, the spikelets 6″ or more long.—Rarely adventized along railroads. June–July.

### 53. HORDEUM L.

Flowers in close terminal spikes three at each joint of the rachis, but the lateral flowers imperfect and stalked. Central flower sessile, its flowering glume long awned. Empty glumes 6, awn-pointed, forming a sort of an involucre.

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|---|---|
| Awn of flowering glume 6″ or less long. | 1. *H. pusillum.* |
| Awn of flowering glume 8″ or more long. | 2. *H. jubatum.* |

**1. H. pusillum** Nutt. Wild Barley. Erect annual, 6′–15′ high: spikes 1′–3′ long, 3″–4″ wide: four middle empty glumes dilated above the base, the two lateral awn-like: lateral flowers not awn-pointed.—Common in dry soil throughout. May–June.

**2. H. jubatum** L. Squirrel Tail Grass. 1°–2° high, ascending: spikes 2′–4′ long, the awns widely spreading, so that it is 1′–2′ wide: awns of flowering glume 8″–24″ long: lateral flowers short-awned.—Introduced locally in waste places. Very abundant at Sheffield. May–June.

### 54. ELYMUS L. Wild Rye.

Spikelets all similar, one-seven-flowered in dense terminal spikes, sessile, 2–4 at each joint of the rachis. Empty glumes two to each spikelet forming a sort of involucre. Flowering glumes rounded on the back, awned, 5-nerved.

| | |
|---|---|
| Empty glumes conspicuously thickened at base. | |
| Flowering glumes smooth. | 1. *E. Virginicus.* |
| Flowering glumes hispidulous-pubescent. | 2. *E. hirsutiglumis.* |
| Empty glumes not conspicuously thickened at base. | |
| Empty glumes strongly hirsute. | 3. *E. striatus.* |
| Empty glumes not strongly hirsute. | 4. *E. Canadensis.* |

**1. E. Virginicus** L. Culms stout, glabrous, 2°–4° high: spike 2′–5′ long, 5″–7″ wide (without awns), erect, from partly included in the upper sheath to long-peduncled: spikelets 2–3-flowered, 2–3 together: empty glumes strongly 5–7-nerved, bearing awns of their own length.—Common in woods and low grounds. June–October.

**2. E. hirsutiglumis** Scribn. Resembles No. 1. Spike glaucous-whitened: empty glumes rough: flowering glumes strongly hispidulous-pubescent.—Frequent on muddy river banks and in low woods. June–October.

**3. E. striatus** Willd. 2°–4° high, slender: sheaths strongly pubescent: spikes 2′–5′ long, 4″–5″ wide (without awns), erect, long-exserted: spikelets 1–2-flowered, mostly in pairs: empty glumes subulate, 3-nerved: flowering glume 3″ long, bearing an awn 12″ long.—Common in dry soil.

**4. E. Canadensis** L. Culms stout, glabrous, 3°–4° high: spike 3′–9′ long, 6″–8″ wide (without the awns), erect to drooping, exserted: empty glumes rough, strongly several-nerved, 15″ long with the awn; flowering glumes soft-pubescent, the awn 9″–15″ long.—Occasional in dry grounds. June–October.

Var. **robustus** (S. & S.) Mackenzie & Bush, n. comb. Spikes 9″ wide (without awns), 5′–8′ long: flowering glumes hispidulous-pubescent, the awns often 24″ long.—Abundant in dry grounds. (*Elymus robustus* S. & S.)

Var. **glaucifolius** (Willd.) Gray. Whole plant strongly glaucous: flowering glumes soft pubescent. Otherwise like var. *robustus*.—Occasional in dry grounds, throughout, especially abundant at Little Blue Tank.

### 55. HYSTRIX Moench. Bottle-brush Grass.

Spikelets in terminal spikes, 2–3 together at each joint of the rachis, 2–3-flowered, on a short pedicel. Empty glumes awl-shaped, usually

absent, except in the bottom spikelet, but sometimes present in all the spikelets. Otherwise as in *Elymus*.

**1. H. elymoides** Mackenzie & Bush, nom. nov. Culms 2°–4° high : spikes 3′–6′ long, more or less exserted : spikelets 4″–5″ long : awn often 12″ long : glumes glabrous to hairy.—Frequent in rocky woods. June–July. (*Elymus Hystrix* L. ; *Hystrix Hystrix* (L.) Millsp.)

## Family 14. CYPERACEAE J. St. Hil.

Grass or rush-like herbs with usually solid-triangular culms (sometimes terete or flattened). Flowers arranged in spikelets, one in the axil of each scale. Perianth none or composed of bristles or scales. Stamens one to three. Ovary one-celled, containing a single erect anatropous ovule. Style 2–3-cleft. Fruit a 3-sided or lenticular achene. Embryos minute at the base of the mealy endosperm. A difficult family, for the study of which ripe fruiting specimens are essential.

Flowers all, or at least some of them, perfect.
- Scales of the spikelet strictly two-ranked.
  - Spikelets in a terminal inflorescence.
    - Spikelets with two or more perfect flowers. — 1. Cyperus.
    - Spikelets with but one perfect flower. — 2. Kyllinga.
  - Inflorescence axillary. — 3. Dulichium.
- Scales of spikelets imbricated all around.
  - Base of style swollen and bulbous.
    - Bristles (perianth) present. — 4. Eleocharis.
    - Bristles not present.
      - Base of style persistent. — 5. Stenophyllus.
      - Base of style not persistent. — 6. Fimbristylis.
  - Base of style not swollen and bulbous.
    - Perianth bristles present.
      - Broad inner scales absent. — 7. Scirpus.
      - Broad inner scales present. — 8. Fuirena.
    - Perianth bristles absent, but a minute hyaline scale present. — 9. Hemicarpha.

Flowers all monoecious or dioecious.
- Achene naked and bony. — 10. Scleria.
- Achene enclosed in a sac (perigynium). — 11. Carex.

### 1. CYPERUS L.

Culms triangular, bearing the spikelets in a terminal compound or single cluster or head, subtended by one or more leaves which form an involucre. Spikelets flattened, the scales two-ranked and keeled. Flowers perfect and perianth none. Style 2- or 3-cleft and achene lenticular or triangular.

Achene lenticular ; style 2-cleft.
- Styles much exserted. — 1. *C. diandrus.*
- Styles scarcely exserted. — 2. *C. rivularis.*

Achene triangular ; style 3-cleft.
- Scales tips recurved or recurved-awned.
  - Scales tipped with a recurved awn. — 3. *C. inflexus.*
  - Scale tips merely recurved. — 4. *C. acuminatus.*

Scale tips not recurved or recurved-awned.
Annuals.
Scales falling from spikelets. 6. *C. erythrorhizos.*
Spikelets falling from rachis.
Leaves rough-margined. 7. *C. speciosus.*
Leaves smooth-margined. 8. *C. ferox.*
Perennials.
Spreading by tuberiferous stolons. 5. *C. esculentus.*
Propagating by corm-like basal tubers.
Scales green or brownish.
Spikelets 3-flowered. 10. *C. ovularis.*
Spikelets more than 3-flowered.
Culms rough on the angles. 12. *C. Bushii.*
Culms almost smooth on the angles. 11. *C. filiculmis.*
Scales yellow or straw-colored. 9. *C. strigosus.*

**1. C. diandrus** Torr. Annual, 2′–12′ high with about three leaves to the involucre : spikelets sessile or on short rays, linear-oblong, many-flowered : scales brownish, membranous and dull : achene oblong, not shining, its superficial cells quadrate.—Along streams. Often abundant on sand-bars along the Missouri River. June–October.

**2. C. rivularis** Kunth. Closely resembles the last but the styles are scarcely exserted, and the scales are subcoriaceous and shining.—Wet, grassy places. More or less common throughout. June–October.

**3. C. inflexus** Muhl. Sweet-smelling annual, 1′–5′ high, growing in dense clumps : spikelets in close heads or with a few short rays : spikelets linear-oblong, 2″–3″ long, 7–13-flowered.—Common on sand-bars along the Missouri River. June–October.

**4. C. acuminatus** Torr. & Hook. Culms 3′–12′ high : spikelets capitate or with 1–4 short rays : spikelets oblong, many-flowered.—Exsiccated places.—Locally abundant. Dodson, Greenwood, Lake City, Grain Valley. July–September.

**5. C. esculentus** L. Culms 1°–2½° high : umbel 4–10-rayed, the rays much shorter than the longest of the involucral leaves : spikelets somewhat flattened, straw-colored, in loose spikes 4″–6″ long, many-flowered : scales nerved with acute, rather loose tips.—In low grounds. Frequent, especially on sand-bars along the Missouri River. June–October.

**6. C. erythrorhizos** Muhl. Culms tufted, 3′–2½° high : involucral leaves 3–7, much longer than the rays of the compound umbel : spikelets numerous, crowded in oblong spikes, 2½″–6″ long, chestnut-brown, flat : scales mucronulate, separating from the axis at maturity. *Wings of the rachis soon separating as a pair of hyaline scales.*—Along streams. Extremely abundant on sand-bars along the Missouri River. May–October.

**7. C. speciosus** Vahl. In general appearance much resembling the last species, but usually lower : leaves rough-margined : spikelets subterete, linear, many-flowered, 3″–12″ long, dull-brown, 1″ or less wide : *rachis broadly-winged, the wings clasping the achene :* scales obtuse, overlapping, thin, dull-brown.—Common on sand-bars along the Missouri River. June–October.

**8. C. ferox** Vahl. Like the last but leaves smooth-margined : umbel more simple : spikelets stouter, rather longer and about 1″ thick : scales rigid, yellowish-brown.—Collected on sand-bars along the Missouri River. June–October.

**9. C. strigosus** L. Culms 6′–3° high : leaves rough-margined, those of the involucre exceeding the rays : umbels simple to very compound : spikelets 4–many-flowered, flat, 4″–12″ long : scales straw-colored with a green midrib, acutish : achene linear-oblong.—Common throughout in damp soil. Exceedingly variable. June–October.

Var. **robustior** Kunth. With a large compound umbel : spikelets 8′ or more long and 10–25-flowered.—Frequent with the type.

**10. C. ovularis** (Michx.) Torr. 6′–2° high : leaves very rough-margined : spikelets 2″–3½″ long, about 3-flowered, in dense globose, sessile or peduncled heads : scales green, several-nerved.—Sparingly adventized at Sheffield. May–September.

**11. C. filiculmis** Vahl. Culms slender and wiry, 6′–18′ high : spikelets densely clustered, in one sessile head, or in 1–7 additional heads on spreading rays : spikelets 4–11-flowered, 2½″–6″ long : scales strongly nerved.—Dry sterile soil, throughout, especially in the southern part, but not common. May–September.

**12. C. Bushii** Britton. Culms 1°–2½° high : umbel 2–9-rayed, the spikelets in loose, ovoid spikes : spikelets loosely 6–12-flowered, 4″–8″ long : scales strongly nerved, acuminate.—One clump was found native in sandy soil in Rush bottom at Courtney many years ago, and it has rarely been adventized along the railroad at the same place. June–September.

## 2. KYLLINGA Rottb.

Spikelets of three or four two-ranked scales, the two lower empty, the third with a perfect flower and the fourth empty or staminate. Spikelets densely aggregated in 1–3 sessile heads and subtended by a 3-leaved involucre. Style 2-cleft and achene lenticular. Perianth none.

**1. K. pumila** Michx. A densely tufted annual, 2′–10′ high with usually 3-lobed heads of spikelets, 3″–4″ long : spikelets 1½″ long.—In moist soil, mostly confined to the northeastern part, where it is often very abundant. July–September.

## 3. DULICHIUM L.

Perennial. Stems jointed, terete and hollow, with numerous 3-ranked leaves, the lower reduced to sheaths. Spikelets 2-ranked in axillary spikes, linear. Scales 2-ranked and decurrent on the axis. Perianth of 6–9 downwardly barbed bristles. Stamens three. Style 2-cleft, persistent on the linear-oblong achene as a beak.

**1. D. arundinacea** (L.) Britton. 2°–3° high : leaves 2′–3½′ long, 2″ wide : spikelets over 6″ long, 6–12-flowered.—Common in bogs along the bluffs about three miles west of Sibley.

### 4. ELEOCHARIS R. Br. Spike Rush.

Culms terete or flattened, naked, terminated by the solitary spikelet. Spikelet several-many-flowered with the scales imbricated in many ranks. Perianth of from 3–12 downwardly barbed bristles. Stamens 2–3, styles 2–3-cleft, its bulbous base persistent on the achene as a tubercle. Achene lenticular or three-angled.

| | |
|---|---|
| Achenes lenticular, smooth. | |
| Annuals. | |
| Spikelets ovoid. | 1. *E. obtusa.* |
| Spikelets oblong-cylindrical. | 2. *E. Engelmanni.* |
| Perennials. | |
| Culms rather stout. | 3. *E. palustris.* |
| Culms slender. | 4. *E. glaucescens.* |
| Achenes triangular, not smooth. | |
| Culms 8′–2° high. | |
| Culms flattened. | 5. *E. acuminata.* |
| Culms filiform. | 6. *E. tenuis.* |
| Culms 1′–8′ high, capillary. | 7. *E. acicularis.* |

**1. E. obtusa** Schultes. Annual with fibrous roots and terete culms: spikelets 2″–5″ long, ovoid or oblong, many-flowered: bristles 6–8, longer than the achene: tubercle deltoid, acute and flat, narrower than and one-fourth the length of the achene.—Common on muddy shores. June–September.

**2. E. Engelmanni** Steud. Closely resembles the last but the culms are stouter, the spikelets usually longer and cylindric, the six bristles are not longer than the achene, and the tubercle covers the top of the achene. —Well introduced in wet places in the first deep cut along the Missouri Pacific Railway, three-quarters of a mile south of the depot at Independence. Our form is the var. *robusta* Fernald. June–September.

**3. E. palustris** (L.) R. & S. Culms terete or flattened, 1°–3° high, from long creeping rootstocks: spikelets many-flowered, 2″–12″ long, ovoid-cylindrical, thicker than the culms: scales usually brownish with a scarious margin.—Common in wet places throughout. A frequent form with flat culms is probably distinct. June.

**4. E. glaucescens** Willd. Culms more slender than in the last: spikelets 2″–5″ long: achenes smaller and tubercles narrower.—Low grounds along the Missouri River near Courtney. June.

**5. E. acuminata** (Muhl.) Nees. Culms compressed, slender, from stout dark rootstocks: spikelets 2″–5″ long, ovoid, thicker than the culm: scales acute, lanceolate: achene 3-angled, dark colored, obovoid, papillose, much longer than the depressed-conic small tubercle.—Wet prairies and barrens, Dodson, Lee's Summit. May–July.

**6. E. tenuis** (Willd.) Schultes. Like the last but culms filiform and scales obtuse.—Wet prairies, Independence, Lee's Summit. May–July.

**7. E. acicularis** (L.) R. & S. Perennial: spikelets ovate or linear-oblong, 3-many-flowered, wider than the culm: achene 3-angled, ribbed

at each angle, and with several intermediate ribs, all connected by transverse ridges.—In marshes and mud-holes in the northern part. Not uncommon. May–September.

### 5. STENOPHYLLUS Raf.

Slender annuals, with spikelets solitary, umbelled or capitate and subtended by one-several leaves. Base of the style persistent as a tubercle on the achene.

**1. S. capillaris** (L.) Britton. Much tufted, 2′–10′ high: culms and leaves capillary: spikelets few, ovoid, 2″ or less long: achene 3-angled, transversely wrinkled.—Locally very abundant in sandy fields and woods four miles south of Grain Valley. June–July.

### 6. FIMBRISTYLIS Vahl.

Annual or perennial with umbellate or capitate spikelets. Flowers as in *Stenophyllus*, save that the enlarged base of the style is not persistent at maturity as a tubercle.

| | |
|---|---|
| Perennial from a thickened base. | 1. *F. castanea.* |
| Annual. | |
| Achene lenticular. | 2. *F. laxa.* |
| Achene 3-angled. | 3. *F. Frankii.* |

**1. F. castanea** (Michx.) Vahl. 1°–3° high, from a bulbous thickened base: leaves involute: umbel simple or somewhat compound: spikelets oblong, 1½″–2″ thick, 3″–5″ long: achene lenticular, longitudinally minutely striate and reticulated.—Rich prairies around Lee's Summit and Grand View; adventized at Atherton. June–July.

**2. F. laxa** Vahl. 6′ high: umbel subsimple: spikelets 1″ wide, 3″ long: achenes longitudinally ribbed, the ribs connected by fine cross lines, and conspicuously tubercled.—Quite abundant in a wet, sterile, open place about one mile north of Greenwood. August–October.

**3. F. Frankii** Steud. 2′–12′ high: umbel somewhat compound: spikelets numerous, less than 1″ wide and 2″ long: achene obovoid, 3-angled, reticulated.—Sand-bars along the Missouri River at Courtney and Sibley. Rare and local.

### 7. SCIRPUS L. Bulrush.

Spikelets from few- to many-flowered, one to very many, solitary or in spikes or umbels. Flowers perfect. Bristle present. Scales imbricated all around. Style 2–3-cleft, not swollen at the base and wholly deciduous, or its base persistent as an awl-like tip. Achenes lenticular or triangular.

| | |
|---|---|
| Spikelets 1–7, appearing lateral. | 1. *S. Americanus.* |
| Spikelets 7–many. | |
| Culms terete, leafless. | 2. *S. lacustris.* |
| Culms three-angled, leafy. | |
| Bristles downwardly barbed. | |
| Spikelets 8″–12″ long, 1–5 together. | 3. *S. fluviatilis.* |
| Spikelets 1″–3″ long, 6–75 together. | 4. *S. atrovirens.* |

Bristles not barbed.
Bristles shorter than or scarcely exceeding the scales. 5. *S. lineatus.*
Bristles much exserted beyond the scales when mature. 6. *S. cyperinus.*

**1. S. Americanus** Pers. Perennial with a sharply 3-angled culm: spikelets 1–7, appearing lateral, the single involucral leaf seeming to be a continuation of the culm: spikelets oblong-ovoid, 3″–4″ long, the scales short-awned: achene plano-convex.—Wet places at Courtney and Sheffield. May–July.

**2. S. lacustris** L. A stout perennial, 3°–9° high: umbel appearing lateral, compound, usually many-flowered: spikelets about 4″ long and 1½″ broad, ovate-oblong: scales mucronate-tipped: bristles barbed: achene plano-convex, white.—Common in all ponds, and often along rivers. May–September.

**3. S. fluviatilis** (Torr.) A. Gray. Culms sharply 3-angled, 3°–6° tall: culm leaves 6″–8″ wide: spikelets sessile, or sessile and crowded at the ends of the raylets: the raylets 5–9 and often 5′ long: achene triangular.—Locally common in ponds, Sheffield, Lake City. May–July.

**4. S. atrovirens** Muhl. Culms 2°–4° high, 3-angled: spikelets brownish in dense capitate clusters, in a terminal compound umbel: spikelets 6–20 together, 1″–3″ long: scales sharp-pointed: bristles 6, downwardly barbed above: achene triangular.—In bogs and low grounds in northeastern part. June–July.

Var. **pallidus** Britton. Spikelets greenish-brown, 20–75 together in the capitate clusters.—Common in damp places throughout.

**5. S. lineatus** Michx. Culm triangular, leafy, 1°–4° high: umbel very compound: spikelets oblong-cylindrical, at length drooping, 2″–5″ long: bristles 6, smooth at maturity, barely if at all exceeding the acute scales.—Common in wet woods or prairies. May–June.

**6. S. cyperinus** (L.) Kunth. A stout perennial, 2°–5° high: umbel very compound: spikelets ovoid-oblong, 1½″–2½″ long: bristles at maturity much exceeding the scales and very conspicuous, rust-colored.—In a bog along the foot of the bluffs three-fourth of a mile east of Courtney. June–July.

### 8. FUIRENA Rottb.

Culms triangular, leafy. Spikelets in axillary and terminal clusters. Scales imbricated all around, awned. Perianth of three cordate-ovate or ovate-oblong scales on claws, alternating with as many downwardly barbed bristles. Stamens three and styles 3-cleft. Achene triangular, tipped with the non-swollen persistent base of the style.

**1. F. simplex** Vahl. A hairy tufted perennial, 10′ high: leaves 1′–1½′ long, 1½″–2″ wide, with loose sheaths: spikelets 3″–6″ long: scales recurved-awned: perianth scales notched at apex, cordate at

base, awned from below the apex, prominently nerved.—On sand-bars along the Mississippi River at Courtney. Very rare. July–October.

### 9. **HEMICARPHA** Nees & Am.

Low, tufted annuals with flowers as in *Scirpus*, save that there is one very small inconspicuous hyaline scale at the base of the ovary. Style 2-cleft. Stamen one.

**1. H. micrantha** (Vahl.) Britton. 1′–5′ high with capillary culms: spikelets 2–3 together, 1″–2″ long, sessile.—Moist sandy soil along rivers, especially the Missouri River. Well distributed, but never common. June–October.

### 10. **SCLERIA** Berg.

Leafy perennial with triangular culms from creeping rootstocks, and monoecious spikelets in terminal, or terminal and axillary clusters. Pistillate spikelets 1-flowered, usually intermingled with the many-flowered staminate ones. Style 3-cleft. Achenes ovoid to globular, white, bony and crustaceous.

**1. S. triglomerata** Michx. NUT RUSH. 1½°–3° tall, erect but nodding at the summit, roughish: achene ovoid-globose, very white, shining and smooth, 1″ high, supported on a crustaceous disk.—Occurs locally in sterile places on the prairie near Oak Grove, Grand View and Lee's Summit. June–July.

### 11. **CAREX** L. SEDGE.

Perennial sedges with mostly triangular culms, 3-ranked leaves and monoecious flowers in spikes. The staminate and pistillate flowers either borne in the same spikes or in different spikes. Spikes usually subtended by bracts. Floral envelopes none, the staminate flowers consisting of three stamens, and the pistillate of a single pistil with a bifid or a trifid style. Achene triangular or lenticular, completely enclosed in a sac, called the perigynium.

Staminate flowers numerous and conspicuous, in one or more terminal spikes (sometimes pistillate at base or apex).
  Perigynia strongly beaked, the beak terminating in two well-developed teeth. I.
  Perigynia beakless or beaked: if beaked the beak not terminating in two well-developed teeth. II.
Staminate flowers few and inconspicuous, borne at the base or apex of the pistillate spike.
  Staminate flowers at the summit of the spikes. III.
  Staminate flowers at the base of the spikes. IV.

I.

Perigynia thin, noticeably inflated.
  Perigynia 6″ or more long.
    Pistillate spikes globose. 1. *C. Asa-Grayi.*

Pistillate spikes oblong-cylindrical. 2. *C. lupulina.*
Perigynia 5″ or less long.
Perigynia tapering into the long beak.
Staminate spikes several. 3. *C. monile.*
Staminate spike usually one.
Spikes 6″ thick; perigynia faintly nerved. 4. *C. lurida.*
Spikes 4½″ thick; perigynia strongly nerved. 5. *C. hystricina.*
Perigynia abruptly narrowed into beak.
Scales exceeding perigynia. 6. *C. Frankii.*
Perigynia exceeding scales. 7. *C. typhinoides.*
Perigynia tapering into minute beak. 17. *C. Davisii.*
Perigynia thick, scarcely inflated.
Perigynia glabrous.
Perigynia teeth 1″ or more long.
Scales acuminate. 8. *C. trichocarpa.*
Scales with long cusp. 9. *C. aristata.*
Perigynia teeth 1″ or less long. 10. *C. riparia.*
Perigynia hairy. 11. *C. lanuginosa.*

II.

Perigynia beak short or wanting.
Staminate spikes usually two or more.
Pistillate spikes erect.
Lowest bract 4′–5′ long. 12. *C. stricta.*
Lowest bract 1′–2′ long. 13. *C. Haydeni.*
Pistillate spikes drooping. 14. *C. gynandra.*
Staminate spike one; pistillate above.
Leaves smooth. 15. *C. Shortiana.*
Leaves hairy.
Spikes stout, 6″ long. 16. *C. hirsuta.*
Spikes slender, 1′ long. 17. *C. Davisii.*
Staminate spike one; staminate throughout.
Perigynia beakless or nearly so.
Leaves 2″–3″ wide. 18. *C. grisea.*
Leaves 1″–2″ wide. 19. *C. amphibola.*
Perigynia with a short, straight beak.
Spikes many-flowered. 20. *C. granularis.*
Spikes 12 or fewer-flowered.
Sheaths smooth. 21. *C. oligocarpa.*
Sheaths scabrous-pubescent. 22. *C. Hitchcockiana.*
Perigynia with a short abruptly bent beak.
Leaves 1″–4½″ wide.
Upper scales obtuse. 23. *C. Meadii.*
Upper scales acute. 24. *C. laxiflora.*
Leaves 6″ or more wide. 25. *C. Albursina.*
Perigynia beak stout, half the length of the body or more.
Culms exceeding the leaves.
Plant strongly pubescent. 29. *C. pubescens.*
Plant glabrous.
Staminate spike 6″–12″ long. 26. *C. Pennsylvanica.*
Staminate spike 2″–4″ long. 27. *C. varia.*
Culms much shorter than the leaves.
Pistillate spikes several-flowered. 28. *C. umbellata.*
Pistillate spikes 1–3-flowered. 30. *C. Jamesii.*

III.

Inflorescence usually $1\frac{1}{2}'$ or more long, the clusters compound.
  Beak of the perigynium longer than the body.
    Beak 1–2 times length of body. 32. *C. stipata.*
    Beak 3–4 times length of body. 33. *C. Crus-Corvi.*
  Beak of perigynium shorter than the body.
    Perigynium and beak 2″ long. 31. *C. conjuncta.*
    Perigynium and beak $1\frac{1}{2}''$ or less long.
      Scales acute to acuminate.
        Leaves exceeding stem. 35. *C. vulpinoidea.*
        Stem exceeding leaves. 36. *C. xanthocarpa.*
      Scales obtusish. 37. *C. Sartwellii.*
Inflorescence usually less than $1\frac{1}{2}'$ long, the clusters rather simple.
  Clusters strongly separated.
    Leaves $\frac{1}{2}''$–$1\frac{1}{2}''$ wide.
      Perigynia radiating. 38. *C. rosea.*
      Perigynia reflexed at maturity. 39. *C. retroflexa.*
    Leaves $2\frac{1}{2}''$–$4\frac{1}{2}''$ wide. 40. *C. sparganoides.*
  Clusters aggregated.
    Heads green when mature.
      Leaves 2″–4″ wide. 41. *C. cephaloidea.*
      Leaves $\frac{1}{2}''$–2″ wide.
        Head 6″ or less long, the clusters hardly recognizable.
          Leaves 1″–2″ wide. 42. *C. cephalophora.*
          Leave 1″ or less wide. 43. *C. Leavenworthii.*
        Head 6″ or more long, the clusters recognizable. 44. *C. Muhlenbergii.*
    Heads yellowish at maturity. 34. *C. gravida.*

IV.

Perigynia widely spreading. 45. *C. sterilis.*
Perigynia not widely spreading.
  Perigynia 2–5 times as long as wide.
    Spikes narrowly cylindric, 6″–12″ long. 46. *C. Muskingumensis.*
    Spikes globular to short-oblong.
      Spikes cone-shaped above. 48. *C. scoparia.*
      Spikes bluntish.
        Perigynia erect. 47. *C. tribuloides.*
        Perigynia spreading. 49. *C. cristatella.*
  Perigynia less than twice as long as wide.
    Heads greenish-brown.
      Perigynia ovate. 50. *C. straminea.*
      Perigynia orbicular. 51. *C. festucacea.*
    Heads silvery-green. 52. *C. Bicknellii.*

**1. C. Asa-Grayi** Bailey. 2°–3° high: leaves many, 3″–$4\frac{1}{2}''$ wide: pistillate spikes 1–2, 1′ in diameter, perfectly globular, 10–30-flowered: perigynia much-inflated, many-nerved, 6″–10″ long.—In low, wet woods near Lake City and Sibley. Rare. May–June.

**2. C. lupulina** Muhl. 2°–4° high: leaves $2\frac{1}{2}''$–4″ wide: pistillate spikes 2–6, oblong-cylindrical, 1′–$2\frac{1}{2}'$ long, densely many-flowered, sessile of short-stalked: perigynia 6″–9″ long, much inflated, many-nerved.—

Low wet woods from Sibley to Atherton. Locally abundant. May–September.

**3. C. monile** Tuckerm. Culms 2°–3° high: leaves 1½″–2½″ wide: staminate spikes 2–4: pistillate 1–3, 1′–2′ long, narrowly cylindric, many-flowered: perigynia somewhat inflated, 2½″ long, strongly-nerved. Abundant near Lake City and Sibley. May–June.

**4. C. lurida** Wahl. 1½°–3° high: leaves long and rough: pistillate spikes 2–4, densely flowered, erect, spreading or drooping, sessile or short-stalked, 9″–24″ long: perigynia 10-nerved, inflated, slender-beaked, 4″ long, the teeth 1″–2″ long: staminate spike solitary.—Very common in bogs along the bluffs west of Sibley. June–July.

Var. **exundans** Bailey. Pistillate spikes all long-stalked.—Occasionally occurs with the type.

**5. C. hystricina** Muhl. Like the last, but pistillate spikes shorter (½′–1½′ long), the lower slender-stalked and drooping: perigynia ½″–2″ long, little-inflated, 15–20-nerved, the beak strongly toothed.—With the last, but matures from May–June before *C. lurida* is noticeable.

**6. C. Frankii** Kunth. 1°–2° high, with long rough leaves and similar bracts, much longer than the culm: pistillate spikes 3–5, very dense, ½′–1½′ long, 4″ in diameter: perigynia abruptly contracted and depressed at the summit, from the center of which depression arises the slender beak.—Common in wet grounds throughout. June–September.

**7. C. typhinoides** Schwein. 2°–3° high: leaves 2″–3″ wide: spikes 1–3, oblong, densely flowered, ¾′–1½′ long, 6″ in diameter, the terminal staminate at base; perigynia obovoid, widely spreading or ascending, beaked, twice the length of the inconspicuous scale. Bogs west of Sibley. Not common. May–June.

**8. C. trichocarpa** Muhl. 1°–4° high, stout: leaves and bract exceeding the culms: staminate spikes 2–6: pistillate spikes 2–5, cylindric, 1′–4′ long: perigynia long-conic, 4″–5″ long, many-nerved, tapering into a stout 2-toothed beak, smooth: scale hyaline, shorter than perigynia. Our form is var. *imberbis* Gray.—Low swales in the Missouri River bottoms. Not common. May–June.

**9. C. aristata** R. Br. Resembles the last, but sheaths pubescent: spikes sometimes 5′ long: perigynia slender: scales terminating in an awn of their own length.—Abundant around Fish Lake near Sibley. May–June.

**10. C. riparia** Curtis. Culms 2°–4° high: leaves rough, long and broad: staminate spikes several: pistillate spikes 2–4, 1½′–4′ long, usually erect, loosely flowered below: perigynia ovate-lanceolate, not inflated, few-nerved, coriaceous: scale exceeded by perigynia.—Low swales and swamps, especially along the Missouri River. Common. May–June.

**11. C. lanuginosa** Michx. Culms 2°–3° high, rough above: leaves 1″–2″ wide: staminate spikes 1–3: pistillate spikes 2–3, rather distant, 1′–2′ long, densely flowered: perigynia hairy, ribbed, 1″ in diameter,

oval, with short beak.—Low prairies and swales throughout. Locally very abundant. May–June.

**12. C. stricta** Lam. 2°–4° high: leaves long and narrow, their lower sheaths sometimes prominently fibrillose: staminate spikes 2 or more: pistillate spikes 2–5, densely flowered, ½′–2′ long, 2″–3″ broad, nearly sessile, the upper often staminate above: perigynia ovate, 1″ long, minutely beaked: scales about length of perigynia.—Low swales and prairies throughout. Locally common. May–June.

Var. **angustata** (Boott) Bailey. Pistillate spikes often 4′ long, erect: scales usually longer than perigynia.—With the type but rarer. May–June.

**13. C. Haydeni** Dewey. Like the last: culms lower and more slender, leaves 1″ or less wide: sheaths not fibrillose: pistillate spikes 6″–14″ long, 2″ or less wide, sessile: staminate portion small: perigynia ovate-orbicular.—Low wet prairies west of Lake City. Rare. May–June.

**14. C. gynandra** Schwein. 2°–5° high: staminate spikes usually 2: pistillate spikes 3–6, narrowly cylindrical, 2′–4′ long, 3″–4″ wide, curved and drooping: perigynia ovate, elliptic, acute, 1¼″ long, nerveless, much shorter than the subulate scale.—In a swale along the railroad, a mile east of Courtney. A few clumps. May–June.

**15. C. Shortiana** Dewey. Culms 1°–3° high: spikes 3–5, approximate at summit of culm, very densely flowered, the uppermost staminate at base, ½′–1½′ long, 2″ in diameter: perigynia flat, orbicular, nerveless, minutely beaked.—Common throughout in low grounds. May–June.

**16. C. hirsuta** Willd. 1°–1½° high: leaves and sheaths pubescent: spikes 2–5, sessile, contiguous, short-oblong, 3″–8″ long, 3″ wide: perigynia ½″–1″ long, flat, oval, few-nerved, beakless, longer than scales.—In dry copses near Leeds and Independence. Not common.

**17. C. Davisii** Schwein. & Torr. 1½°–3° high: leaves 2″–3″ wide, sparingly pubescent: spikes 3–5, all long-stalked and spreading, the uppermost staminate at base, 6″–18″ long, 3″ wide: perigynia 2″ long, ovoid, inflated and strongly nerved, the beak minutely 2-toothed: scales lanceolate, conspicuously long-awned.—Rather common in moist thickets and woods throughout. May–June.

**18. C. grisea** Wahl. 1°–2° high, slightly glaucous: leaves and bracts 2″–3½″ wide, the latter overtopping the spikes: staminate spikes solitary, small and sessile: pistillate spikes 3–5, 5″–8″ long, oblong, compact, the upper sessile, the lower peduncled: perigynia 2½″ long, oblong, beakless and finely striate: scales cuspidate.—Low woods along the Little Blue River west of Lake City. Not common. May–June.

**19. C. amphibola** Steud. Culms slender, 1°–2½° high: leaves 1″–2″ wide: staminate spike solitary, peduncled: pistillate spikes 2–5, 6″–12″ long, slender, loosely several-flowered, all peduncled: perigynia 2″ long,

oblong, pointed but beakless, 2-ranked : scales cuspidate.—Near Lake City and Martin City. Uncommon. May–June.

**20. C. granularis** Muhl. 1°–2½° high, glaucous : leaves flat, 1½″–3″ wide : staminate spike solitary : pistillate spikes 2–4, erect, compact, short-oblong, 1′ or less long : perigynia 1″ long, ovoid, short-beaked and strongly nerved.—Moist woods and meadows, especially in the northern part. Quite frequent. May–June.

**21. C. oligocarpa** Schk. Like *C. amphibola :* pistillate spikes 4″–8″ long, looser flowered : perigynia 1″–1¼″ long, abruptly contracted into a short beak, many-striate.—Common in rich woods. April–June.

**22. C. Hitchcockiana** Dewey. Culms erect, 1°–2° high : leaves about 2″ wide, their sheaths scabrous-pubescent : pistillate spikes 2–4, like the last : perigynia ovoid, stoutly beaked, shorter than the rough-awned scale.—Frequent in rich woods from Courtney to Sibley. May–June.

**23. C. Meadii** Dewey. Usually less than 1° high : staminate spike solitary, stout, long-stalked : pistillate spikes 2–3, stout, densely several–many-flowered, 3″–13″ long : perigynia 1½″–2″ long, oblong, many-nerved, the beak usually strongly bent, longer than the scale.—Common on prairies and in dry oak woods, especially in the southern part. May–June.

**24. C. laxiflora** Lam. Culms 6′–2° high, glabrous : leaves 3″ or less wide : staminate spike stalked : pistillate spikes loosely few-flowered, ½′–1′ long : perigynia triangular, 1¼″ long, obovate, strongly nerved, with a much bent beak : scales scarious-margined.—A common species in woods and thickets. May–June.

Var. **blanda** (Dewey) Boott. Lower : pistillate spikes ½′ or less long, more densely flowered, the upper sessile and contiguous to the inconspicuous sessile staminate spike.—Very common in open woods and meadows.

Var. **varians** Bailey. 1½°–2½° high : leaves often 3½″ wide : pistillate spikes ½′–1½′ long, the two upper sessile and contiguous to the usually sessile staminate spike.—Rich copses in the northeastern portion. Not uncommon.

Var. **patulifolia** (Dewey) Carey. Glaucous : leaves 3″–5″ broad : staminate spike conspicuous, peduncled : pistillate spike often 1′ or more long, loosely flowered : perigynia beak nearly straight.—In rich woods near Levasy. Rare.

**25. C. Albursina** Sheldon. 1° or less high : leaves numerous, 6″–18″ wide, the bracts similar and much longer than the loosely-flowered pistillate spikes : staminate spike nearly sessile : perigynia 3″–4″ long, strongly nerved and short-beaked.—A strongly marked species found quite abundantly in the wet rocky bluff woods at Courtney. May–June.

**26. C. Pennsylvanica** Lam. 6′–15′ high, strongly stoloniferous : leaves narrow and somewhat involute : staminate spike brownish-purple nearly sessile, ½′–1′ long : pistillate spikes 1–3, sessile, short and few-

flowered, usually contiguous: perigynia 1″ long, round-ovate, hairy.—Very common in dry woods and on the prairie. April–May.

**27. C. varia** Muhl. Resembles the last but staminate spike only 2″–4″ long, sessile: pistillate spikes 2–4: perigynia oblong.—Infrequent in dry rocky woods throughout the northern part. April–May.

**28. C. umbellata** Schk. Densely tufted, leaves ½″–2″ wide, often 1° long: spikes on scapes 1′–2′ long, numerous, hidden among the leaves or on short culms: pistillate spikes filiform-stalked or sessile at the base of the solitary staminate spike, several-flowered, 2″–4″ long: perigynia 1″ long, minutely hairy.—In dry soil. Common near Dodson; also found north of Lee's Summit. April–May.

**29. C. pubescens** Muhl. About 1½° high, pubescent all over: staminate spike sessile and inconspicuous: pistillate spikes 2–5, 4″–10″ long, erect and nearly sessile: perigynia ovoid, 2″ long, densely hairy.—In rich woods near Sibley and Independence. May–July.

**30. C. Jamesii** Schwein. 12′ or less high: leaves 1½″ wide, much exceeding the culms: spikes small, the staminate portion slender and inconspicuous, with 2–4 pistillate flowers at base; perigynia globular, prolonged into a rough, two-edged, stout beak: lower scales bract-like and foliaceous.—Common in dark, rich woods throughout. May–June.

**31. C. conjuncta** Boott. Culms weak, 1°–3° high, sharply triangular: leaves often 4½″ wide: head 1′–3′ long, the lower spikes separated: bracts inconspicuous: perigynia 1½″ long, lance-ovate, tapering into a rough beak, about the length of the cuspidate scale.—Not uncommon in moist meadows and thickets in the northern part. May–June.

**32. C. stipata** Muhl. Culms 2°–3° high: leaves 2″–4″ wide: head 1′–4′ long, usually not branched, the spikes yellowish-brown and crowded: perigynia lanceolate, 2″ long, the beak longer than the body and much exceeding the scale.—Frequent in moist meadows from Sheffield and Adams to Sibley and Levasy. May–June.

**33. C. Crus-Corvi** Shuttlw. Culms 2°–4° high: leaves 5″ or less wide: head very compound, 4′–12′ long: spikes yellowish-brown: perigynia lanceolate, 4″ long, the beak more than thrice the length of the body: scale one-fourth the length of the perigynia.—Locally common around swamps at Sibley and Atherton. June–July.

**34. C. gravida** Bailey. Culms 1°–3½° high: leaves 1″–2″ wide, usually shorter than the culm: the globular spikes aggregated in a short (1′–1½′ long) oblong head, somewhat interrupted: perigynia broadly ovate, 2″ long, polished and widely spreading when ripe.—Common in dry soil, especially on dry prairies throughout the southern part. May–June.

Var. **laxifolia** Bailey. Leaves 3″ wide: head dense, not interrupted.—Prairies near Lee's Summit.

**35. C. vulpinoidea** Michx. Culms often 3° high, exceeded by the leaves: head 1′–5′ long, usually interrupted, the numerous spikes 2″–4″

long, densely flowered : bracts setaceous : perigynia broadly ovate, greenish-yellow, 1″ long, tipped by a two-toothed beak, half the length of the body.—Common in moist soil throughout. May–June.

**36. C. xanthocarpa** Bicknell. Resembles the last : head dense, ¾′–2′ long, the bracts conspicuous or inconspicuous : perigynia 1½″ long, bright-yellow, ovate-elliptic or suborbicular, tipped with a minutely two-toothed beak. — Frequent in low grounds throughout. May–June.

**37. C. Sartwellii** Dewey. Culms 1°–3° high, exceeding the long-attenuate leaves : head 1′–3′ long, narrow and somewhat separated : bracts setaceous, usually small : spikes 2″–4″ long : perigynia lance-elliptic, 1″ long, contracted into a short beak : scales blunt, pale-brown, and hyaline tipped.—Low meadows west of Lake City.

**38. C. rosea** Schk. Culms bright green, 1°–1½° high, weak and often reclining : leaves narrow : spikes 5–8, 5–16-flowered, the upper aggregated, the lower 2–4 widely separated : perigynia widely radiating, lance-ovate, flat, bright green, 1½″ long.—Rather common in dry woods. May–June.

Var. **radiata** Dewey. Spikes 2–5, only 2–6-flowered.—With the type but more common. May–June.

**39. C. retroflexa** Muhl. Erect culms, 1°–1½° high : spikes closely aggregated, the lower one or two separated : perigynia 1½″ long, ovate-lanceolate, corky-thickened at the base, reflexed at maturity.—Woods near Courtney. May–June.

**40. C. sparganioides** Muhl. Culms sharply 3-angled, 2°–3° high : leaves 3″–4″ broad : spikes 6–12, more or less separated : perigynia ovate, 1½″ long, wing-margined, longer than the scale.—Rich woods throughout. May–July.

**41. C. cepha oidea** Dewey. Culms erect but not stiff, 2°–3° high : leaves 2″–4″ broad : head 9″–15″ long, with spikes commonly distinct but not separated : perigynia 2″ long, nerveless, ovate-lanceolate, twice the length of the membranous scale.—Rocky woods along Spring Branch near Pixley's Switch. June.

**42. C. cephalophora** Muhl. Erect : culms 1°–2° high : leaves 1″–2″ wide : head 6″ long, short-oblong, never interrupted : bracts setaceous : perigynia 1″–1½″ long, ovate, nerveless, about the length of the scale.—Common in dry ground. May–July.

**43. C. Leavenworthii** Dewey. About 1° high : leaves 1″ or less wide : head 4″–8″ long, not interrupted and with short bracts : perigynia less than 1″ long, orbicular-ovate : scale shorter and narrower than the perigynia.—Sandy, bluff woods near Courtney. Locally common. May–June.

**44. C. Muhlenbergii** Schk. Culms 1°–2½° high, longer than the narrow (1″–2″ wide) leaves : head 9″–12″ long, the clusters recognizable :

spikes 4–10, globose : perigynia orbicular-ovate, 1½″ long, not nerved, shorter than the scale.—In dry ground near Lee's Summit and Courtney. May–June. Our form is var. *Xalapensis* (Kunth) Britton.

**45. C. sterilis** Willd. Culms 8′–20′ high : leaves less than 1″ wide : spikes 3–5, several–many-flowered, usually separate, the staminate flowers usually numerous : perigynia ovate-lanceolate, 1½″ long, nerved, tapering into a sharp, rough beak, half the length of the body, longer than the scale.—Prairie near Lee's Summit. May–June.

**46. C. Muskingumensis** Schwein. Stout culms, 2°–3° high : leaves 2½″ wide or less : spikes distinct, light brown, 6″–12″ long, oblong-cylindric, many-flowered : perigynia linear-lanceolate, 3″–4″ long, much longer than the scale.—In swampy ground near Lake City and Sibley. May–June.

**47. C. tribuloides** Wahl. 1°–3° high : leaves about 2″ wide : spikes 6–20, short-oblong, truncate at summit, 3″–6″ long, 3″–4″ wide : perigynia 2″–3″ long, lanceolate, ascending or erect, twice the length of the scale.—In moist meadows throughout. May–June.

Var. **turbata** Bailey. Spikes 3″ long, 2½″ wide, ovoid-oblong : head 1′–2′ long, the lower spike separated.—Low grounds from Sheffield to Sibley.

**48. C. scoparia** Schk. Culms 1°–2½° high : leaves about 1″ wide : spikes 3–8, brownish, 3″–8″ long, oblong-conic, close together, usually bractless : perigynia 2″–3″ long, lanceolate, erect or ascending, longer than the scale.—Common on prairies near Waldo Park, Lee's Summit and Atherton. June.

**49. C. cristatella** Britton. Culms 1½°–3° high : leaves 1½″–2″ wide : spikes 6–15, globular, 2″–3″ long, contiguous : perigynia 1½″–2″ long, ovate-lanceolate, spreading or ascending, their points conspicuous, much longer than the scale.—Common in low meadows and thickets. May–June.

**50. C. straminea** Willd. Culms 1°–3° high : leaves ¾″–2″ wide : spikes 3–8, globular, 3″–4″ broad, distinct : perigynia 1½″ long, ovate, wing-margined, ascending or spreading, exceeding the scale.—Infrequent in woods. Our form is var. *mirabilis* (Dewey) Tuckerm. May–June.

**51. C. festucacea** Willd. Culms stiff and erect, 1°–3° high : leaves 1″–2″ wide : spikes 3–8, 3″–5″ broad, greenish-brown, oblong to globular, contiguous, short-bracted : perigynia orbicular, broadly margined, 1½″ long, ascending, about the length of the scale.—Common in open grounds. May–June.

**52. C. Bicknellii** Britton. Culms 2°–4° high : leaves 1½″–2½″ wide: spikes 3–7, 4″–6″ long, ovoid, silvery-green, close together : perigynia orbicular, strongly winged, 2″–3″ long.—Frequent in dry or wet open grounds throughout. May–June.

## Family 15. ARACEAE Neck.

Herbs with dioecious, monoecious or perfect flowers on a spadix surrounded by a spathe. Perianth absent or of 4–6 sepals. Stamens 4–10. Ovary with 1–several ovules. Fruit berry-like.

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| Leaves compound. | 1. Arisaema. |
| Leaves simple and rush-like. | 2. Acorus. |

### 1. ARISAEMA Mart.

Perennial from an acrid corm. Flowers dioecious or monoecious at the base of the spadix. Perianth absent. Staminate flowers composed of a few, nearly sessile, 2-4-celled anthers, the pistillate of a 1-celled ovary containing 1–8 ovules.

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|---|---|
| Leaf divided into 3 leaflets. | 1. *A. triphyllum.* |
| Leaf divided into 7–11 leaflets. | 2. *A. Dracontium.* |

**1. A. triphyllum** (L.) Torr. Jack-in-the-Pulpit. Leaves 1–2, with 3 elliptical-ovate leaflets: spathe hooded and curving over the spadix, opened at the throat: spadix 2′–3′ long, club-shaped.—Rather common in rich damp woods. April–May.

**2. A. Dracontium** (L.) Schott. Green Dragon. Leaf usually solitary, divided into 7–15 oblong-lanceolate leaflets: spathe oblong, acuminate and convolute at the apex, much exceeded by the long (1′–9′) and slender tip of the spadix.—In woods throughout. Well distributed, but nowhere abundant. May.

### 2. ACORUS L.

Herbs from long running, pungent aromatic rootstocks. Scapes 3-angled, similar to the leaves. The spadix seemingly lateral, the spathe appearing like a continuation of the culm. Flowers perfect, densely covering the spadix. Sepals and stamens 6. Ovary 2–4-celled with several ovules in each cell.

**1. A. Calamus** L. Sweet Flag. 2°–5° high.—Very abundant in a swamp near the Little Blue River east of Atherton; Levasy. May.

## Family 16. LEMNACEAE Dumort.

Minute floating aquatics, consisting of a frond, bearing flowers from the edge or surface. Flowers monoecious, consisting of a single stamen or a single pistil. Ovary bearing 1–6 erect ovules. The species are all known as "Duckweeds."

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| Frond with several rootlets. | 1. Spirodela. |
| Frond with one rootlet. | 2. Lemna. |
| Frond without rootlets. | 3. Wolffia. |

### 1. SPIRODELA Schleid.

Fronds 7–12-nerved. Ovary bearing two ovules.

**1. S. polyrhiza** (L.) Schleid. Fronds 2″–5″ long, round-obovate, green above, purplish beneath, usually 7-nerved.—Often very common in ponds and ditches.

### 2. LEMNA L.

Frond 1–5-nerved. Flowers usually three together from a spathe, two staminate and one pistillate, the latter containing 7–12 ovules.

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|---|---|
| Fronds stalked at base. | 1. *L. trisulca.* |
| Fronds not stalked at base. | |
| Fronds not symmetrical. | |
| Fronds 1-nerved. | 2. *L. cyclostasa.* |
| Fronds 3-nerved. | 3. *L. perpusilla.* |
| Fronds symmetrical. | 4. *L. minor.* |

**1. L. trisulca** L. Fronds oblong-lanceolate, 5″–10″ long, attenuate at base into a slender stalk, denticulate at apex, thin, usually several connected.—Common in pools at Sheffield, Lake City and Sibley. Summer.

**2. L. cyclostasa** Phillippi. Frond elliptic-oblong, 1″–2″ long, thickish, obscurely 1-nerved.—Common in a pond near Sheffield and Courtney. Summer.

**3. L. perpusilla** Torr. Frond obovate, 1″–1½″ long, thickish, obscurely 3-nerved, abruptly narrowed into a short stalk.—In ponds near Courtney, Sheffield and Sibley. Summer.

Var. **trinervis** Austin. Fronds strongly 3-nerved.—Ponds near Sheffield.

**4. L. minor** L. Frond elliptic-obovate to suborbicular, 1″–2″ long, thickish, obscurely 3-nerved and never plainly stalked.—Often very abundant in ponds at Sheffield, Sibley, Grain Valley and Lake City. Summer.

### 3. WOLFFIA Horkel.

Fronds nerveless. Flowers two together, the one staminate, the other pistillate. Ovule solitary.

**1. W. Columbiana** Karst. Frond globose, ⅓″–⅔″ long, not dotted: stomata 1–6. Floats just beneath the surface of the water.—In ponds near Atherton, Sheffield and Lake City. June–July.

## Family 17. COMMELINACEAE Reichenb.

Herbs with perfect, 6-androus flowers subtended by spathe-like or leafy bracts. Perianth double, the outer of three green sepals, the inner of three ephemeral petals. Stamens 6. Ovary 2–3-celled, with 1–several ovules in each cell. Style one.

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| Two of the petals much larger than the third. | 1. Commelina. |
| Petals all similar. | 2. Tradescantia. |

### 1. COMMELINA L. Day Flower.

Flowers subtended by a spathe-like bract. Sepals unequal, the two lateral partly united. Petals blue, the two lateral on long claws, the other smaller. Three stamens perfect, the other three sterile and smaller. Filaments glabrous.

**1. C. crispa** Wooton. 1°–3° high: leaves lanceolate, 3′–5′ long: spathe cucullate: each cell of ovary 1-ovuled, the dorsal one indehiscent.—

In sandy soil near Martin City, Little Blue Tank and Lake City. July–August.

### 2. TRADESCANTIA L.

Bracts leaf-like. Flowers regular, umbellate. Sepals and petals three each, the latter ovate and sessile. Stamens 6, all similar, the filaments beautifully bearded. Ovary 3-celled, with 2 ovules in each cell.

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|---|---|
| Sepals nearly glabrous. | 1. *T. reflexa.* |
| Sepals strongly hairy. | |
| Leaves long-ciliate at base. | 2. *T. occidentalis.* |
| Leaves not long-ciliate at base. | 3. *T. bracteata.* |

**1. T. reflexa** Raf. SMOOTH SPIDERWORT. 1°–4° high, glaucous: leaves spreading, 8′–20′ long, 5′′–7′′ wide: umbels many-flowered: pedicels reflexed at maturity: sepals hairy at tip: petals blue or purplish.—Common in open ground, especially on prairies. May–June.

**2. T. occidentalis** Britton. WESTERN SPIDERWORT. 1°–2° high, glabrous: leaves ascending, short-hairy, 7′–15′ long, 3′′–5′′ wide, flattish, exceeding the stems: umbels few-flowered.—In barrens along Brush Creek and at Dodson. May–June.

**3. T. bracteata** Small. HAIRY SPIDERWORT. 8′–15′ high: leaves widely spreading, 4′–8′ long, 5′′–8′′ wide, strongly keeled: umbels few-flowered: flowers reddish.—Frequent on prairies throughout. May–June.

## FAMILY 18. PONTEDERIACEAE Dumort.

Marsh plants with flowers subtended by leafy spathes. Perianth colored, 6-merous, free from the ovary. Stamens 3 or 6, inserted on its throat, unequal. Ovary 3-celled and many-ovuled, or 1-celled and 1-ovuled.

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|---|---|
| Stamens six. | 1. PONTEDERIA. |
| Stamens three. | 2. HETERANTHERA. |

### 1. PONTEDERIA L.

Flowers numerous, blue, ephemeral, on a long scape. Perianth 2-lipped, the upper three lobes ovate, the three lower linear-oblong and spreading. Stamens six, three long-exserted, the other three on short filaments. Ovary 3-celled, two of the cells abortive, the other 1-ovuled.

**1. P. cordata** L. PICKEREL WEED. 1°–3° high: leaves ovate, cordate-sagittate, long-petioled, blunt at apex: inflorescence glandular-pubescent.—Occurs locally in marshes between Adams and Lake City. June–August.

### 2. HETERANTHERA R. & P.

Spathes 1–several flowered. Flowers small. Perianth divisions equal. Stamens three. Ovary 3-celled with numerous ovules.

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|---|---|
| Flowers blue. | |
| Spathes 2–6-flowered. | 1. *H. reniformis.* |
| Spathes 1-flowered. | 2. *H. limosa.* |
| Flowers yellow. | 3. *H. dubia.* |

**1. H. reniformis** R. & P. MUD PLANTAIN. Leaves cordate or reniform: flowers 4″ long.—In ponds. Abundant north of Sheffield ; also near Courtney, Lake City, Buckner and Atherton. July–September.

**2. H. limosa** (Sw.) Willd. SMALLER MUD PLANTAIN. Leaves ovate or oval : flowers 5″ long.—Abundant in a pond north of Sheffield with the last; also near Atherton. July–September.

**3. H. dubia** (Jacq.) MacM. WATER STAR GRASS. Leaves linear and grass-like : spathe 1-flowered.—Abundant in Hiffner's Lake near Atherton. July–September.

## FAMILY 19. JUNCACEAE Vent.

Rush-like herbs with regular, greenish flowers. Perianth 6-parted. Stamens 3 or 6. Style solitary. Stigmas 3. Ovary superior, 3-celled, or 1-celled with 3 parietal placentae. Capsule many-seeded.

### 1. JUNCUS L. RUSH.

Perennial or annual herbs with flowers very variously arranged.

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|---|---|
| Flowers in sessile apparently lateral panicles. | |
| Stamens three. | 1. *J. effusus.* |
| Stamens six. | 2. *J. Balticus.* |
| Flowers terminal. | |
| Leaves not knotted. | |
| Annual. | 3. *J. bufonius.* |
| Perennial. | |
| Leaf-auricles white, scarious. | 4. *J. tenuis.* |
| Leaf auricles brownish-yellow. | 5. *J. Dudleyi.* |
| Leaves knotted by internal transverse partitions. | |
| Stamens six. | |
| Capsule short-pointed. | 6. *J. Richardsonianus.* |
| Capsule subulate-pointed. | |
| Heads 8–20-flowered. | 7. *J. nodosus.* |
| Heads 25–80-flowered. | 8. *J. Torreyi.* |
| Stamens three. | 9. *J. acuminatus.* |

**1. J. effusus** L. Densely tufted, 2°–4° high: stems leafless : flowers $1\frac{1}{4}$″ long, in a diffuse panicle : sepals about the length of the retuse pointless capsule.—Along the outlet to the railroad pond at Grain Valley. Probably adventized. June–August.

**2. J. Balticus** Willd. 8′–3° high : stems leafless : flowers 2″ long in a panicle, 1′–$2\frac{1}{2}$′ long : outer sepals acute, the inner obtusish, about the length of the strongly mucronate capsule.—Of rare occurrence on sand-bars along the Missouri River. June.

**3. J. bufonius** L. 3′–9′ high, spreading : leaves narrow : panicle dichotomous, the flowers distant : sepals 2″–$3\frac{1}{2}$″ long, acuminate, the outer much exceeding the three inner and the oblong obtuse capsule. —Sand-bars along the Missouri River. Rare. May–November.

**4. J. tenuis** Willd. 1′–40′ high, erect, wiry: leaves narrow : leaf-auricles scarious, much prolonged beyond point of insertion: panicle 1–

many-flowered : sepals 1½″–2½″ long, very acute, subequal, spreading, longer than the obtuse, oblong capsule.—Common in all kinds of situa. tions and wonderfully variable. May–November.

5. **J. Dudleyi** Wiegand. Resembles stout forms of the last, but readily distinguished by the brownish-yellow cartilaginous leaf-auricles, which are not prolonged.—Common in meadows and along streams. May–August.

6. **J. Richardsonianus** Schult. 6′–20′ high : panicle branches erect, the flowers in distinct heads : sepals 1″ long, the three outer sharper and longer than the three inner, but shorter than the ovoid-oblong, short-tipped capsule.—Sand-bars along the Missouri River. Rare. September–October.

7. **J. nodosus** L. 6′–24′ high, from a tuber-bearing rootstock : panicle bearing 1–30 heads, 3″–6″ wide : sepals less than 2″ long, subequal, shorter than the lanceolate-subulate capsule.—Sand-bars along the Missouri River. Not common. May–November.

8. **J. Torreyi** Coville. Similar to the last but larger : heads 30–80-flowered, 4″–8″ wide : sepals more than 2″ long, the three outer longer than the three inner.—Often abundant in moist places throughout. May–November.

9. **J. acuminatus** Michx. Stems erect, 1°–3° high : inflorescence of 5–many 3–20-flowered heads : sepals less than 2″ long, equal, about the length of the ovoid-oblong abruptly pointed capsule.—Abundant in ponds and ditches from Adams to Atherton and Levasy. May–July.

## Family 20. **MELANTHACEAE** R. Br.

Leafy-stemmed herbs from rootstocks, with grass-like leaves, and panicled or racemose, polygamous, dioecious or perfect flowers. Perianth composed of six segments. Stamens six at the base of the perianth. Styles three. Seeds few–many.

### 1. MELANTHIUM L.

Flowers numerous in large terminal panicles, monoecious or polygamous, greenish-white. Perianth divisions clawed at base. Styles three, spreading. Capsule septicidal. Inflorescence pubescent.

1. **M. Virginicum** L. Bunch-flower. 2°–5° high : leaves 1° long, 4″–12″ wide : perianth segments oblong, entire, 2-glandular at base.—Moist meadows throughout the southern and eastern parts, but local. June–July.

## Family 21. **LILIACEAE** Adans.

Herbs from bulbs, corms or rootstocks. Flowers regular, perfect. Perianth 6-parted. Stamens 6, free or adnate to the perianth segments. Ovary 3-celled, its cells with few–many ovules. Fruit a loculicidal capsule.

| | |
|---|---|
| Roots fibrous, fleshy. | |
| Flowers drooping. | 1. UVULARIA. |
| Flowers erect. | 2. HEMEROCALLIS. |
| Plants from bulbs or corms. | |
| Flowers in umbels. | |
| Onion-scented. | 3. ALLIUM. |
| Not onion-scented. | 4. NOTHOSCORDUM. |
| Flowers not in umbels. | |
| Flowers not from axils of bracts. | |
| Leaves many. | 5. LILIUM. |
| Leaves two. | 6. ERYTHRONIUM. |
| Flowers from axils of bracts. | |
| Flowers racemose, light blue. | 7. QUAMASIA. |
| Flowers corymbose, white. | 8. ORNITHOGALUM. |

## 1. UVULARIA L.

Leafy-stemmed herbs with drooping yellow flowers. Perianth bell-shaped, its lobes bearing nectaries at base. Anthers linear. Style 3-cleft. Capsule ovoid, 3-angled. Stems forking.

**1. U. grandiflora** J. E. SMITH. BELLWORT. 6′–20′ high, bearing but one leaf beneath the fork : leaves ovate, perfoliate, pubescent beneath : perianth 9″–15″ long, its segments smooth.—Quite abundant in rich woods throughout. April–May.

## 2. HEMEROCALLIS L.

Herbs with long, linear basal leaves and numerous large showy flowers terminating a tall scape. Perianth divisions widely spreading. Stamens six, with long filaments. Stigma capitate on a long slender style.

**1. H. fulva** L. DAY LILY. Scapes 3°–6° high : flowers tawny orange, 4′–5′ long.—Occasionally escaped around old gardens. June–August.

## 3. ALLIUM L. WILD ONION.

Strong-scented, stemless herbs from coated bulbs. Flowers numerous, white or pinkish, subtended by scarious bracts. Perianth divisions separate. Stigma simple. Capsule 3 valved, each cell bearing 1–2 ovules.

| | |
|---|---|
| Flowers usually replaced by bulblets. | 1. *A. Canadense.* |
| Flowers not replaced by bulblets. | 2. *A. mutabile.* |

**1. A. Canadense** L. 8′–20′ high : bulb coats fibrous-reticulated : leaves linear : sepals white or pink.—Often very common in moist woods. June.

**2. A. mutabile** Michx. 1°–2½° high : bulb coats fibrous-reticulated : leaves channeled : sepals pink or rose.—Common in barrens. May.

## 4. NOTHOSCORDUM Kunth.

Resembling *Allium*, but not onion-scented. Ovules several in each cell of the ovary.

**1. N. bivalve** (L.) Britton. FALSE GARLIC. Less than 1° high: umbel 4–12-flowered: flowers yellowish-white, 4″–5″ long.—Locally abundant in barrens near Westport, Leeds, Dodson, Independence, Lee's Summit, Greenwood and Grain Valley. April–May.

### 5. LILIUM L.

Tall perennials with leafy stems from scaly bulbs. Flowers large and showy, 1–many, funnel-form or bell-shaped. Sepals 6, spreading or recurved. Stamens 6, with linear anthers and long, filiform filaments. Stigma 3-lobed. Ovules numerous.

Leaves roughened on the veins beneath. 1. *L. Canadense.*
Leaves smooth. 2. *L. superbum.*

**1. L. Canadense** L. CANADA LILY. 2°–7° high. Leaves whorled, lanceolate, 3-nerved, scabrous on the veins beneath: perianth segments 2′–3′ long, recurved or spreading.—In moist meadows and woods near Dodson and Lee's Summit. June–July.

**2. L. superbum** L. TURK'S-CAP LILY. Closely resembles the preceding but is perfectly smooth throughout: perianth divisions strongly recurved.—In similar situations between Independence and Little Blue Tank. June–July.

### 6. ERYTHRONIUM L. MARCH LILY. DOG-TOOTH VIOLET.

Herbs from deep-seated solid bulbs, one-leaved in the sterile and two-leaved in the fertile plants. Flowers large, solitary, nodding. Perianth segments six. Capsule obovoid or oblong.

Perianth segments recurved; leaves mottled. 1. *E. albidum.*
Perianth segments not recurved; leaves not mottled. 2. *E. mesachoreum.*

**1. E. albidum** Nutt. Leaves oblong-lanceolate: new corms produced on offshoots from base of old: flowers white or pinkish.—Common in rich woods. April–May.

**2. E. mesachoreum** Knerr. New corms formed at the base of old: flowers light-lavender tinted.—Common in barrens and on prairies. March–April.

### 7. QUAMASIA Raf.

Flowers on jointed pedicels. Stamens 6, inserted on base of perianth lobes, the anthers linear or linear-oblong. Capsule 3-angled, many-seeded.

**1. Q. hyacinthina** (Raf.) Britton. WILD HYACINTH. 1°–2° high: raceme several–many-flowered: sepals 4″–7″ long: capsule strongly triangular.—Common in moist woods and barrens throughout. May.

### 8. ORNITHOGALUM L.

Scapose herbs with white or yellowish flowers in terminal bracted racemes or corymbs. Stamens six, hypogynous, the anthers versatile. Capsule 3-angled, with few seeds in each cell.

**1. O. umbellatum** L. STAR-OF-BETHLEHEM. 4′–12′ high: leaves narrowly linear: flowers 5–8, corymbose on long pedicels.—Well escaped from gardens in Independence. April–June.

## FAMILY 22. CONVALLARIACEAE Link.

Herbs from rootstocks, never from bulbs or corms. Fruit a fleshy berry. Otherwise as in LILIACEAE.

| | |
|---|---|
| Leaves scale-like. | 1. ASPARAGUS. |
| Leaves not scale-like. | |
| Leaves not whorled. | |
| Flowers in a terminal raceme. | 2. VAGNERA. |
| Flowers axillary. | 3. SOLOMONIA. |
| Leaves three, whorled. | 4. TRILLIUM. |

### 1. ASPARAGUS L.

Tall, much-branching herbs with filiform branches. Flowers small, with 6-parted perianth, the stamens inserted on the base of its lobes. Anthers ovate or oblong. Berry globose, 6-seeded.

**1. A. officinalis** L. ASPARAGUS. 2°–8° high: flowers greenish, axillary, drooping.—Occasionally escaped from gardens. June–August.

### 2. VAGNERA Adans. FALSE SOLOMON'S SEAL.

Whitish perianth segments six, distinct, the stamens inserted at their base. Anthers ovate. Berry globular, 6-seeded.

| | |
|---|---|
| Flowers numerous. | 1. *V. racemosa.* |
| Flowers few. | 2. *V. stellata.* |

**1. V. racemosa** (L.) Morong. 1°–3° high: leaves numerous, sessile, oblong-lanceolate, over 1′ wide: flowers numerous in a terminal racemose panicle, 1″ long, 2″ broad: berries red, purple-spotted.—Infrequent in moist woods throughout. May–June.

**2. V. stellata** (L.) Morong. 1° high, glabrous and glaucous: leaves oblong-lanceolate, sessile-clasping, usually less than 1′ wide: flowers few, racemose: berries black.—Sandy woods in the Missouri bottoms near Sibley; also near Turner, Kansas.

### 3. SOLOMONIA Heist.

Tall herbs from thick, jointed and scarred rootstocks, bearing many leaves. Flowers axillary, drooping on jointed pedicels. Perianth oblong-cylindric, 6-lobed, the 6 stamens inserted on its tube and included. Anthers sagittate. Berry globular, 6–18-seeded.

**1. S. commutata** (R. & S.) Britton. SOLOMON'S SEAL. 1°–8° high: leaves lanceolate to ovate, smooth, somewhat clasping: peduncles 1–8-flowered: filaments smooth, adnate to middle of perianth tube.—Rather common in rich woods throughout. June.

### 4. TRILLIUM L.

Glabrous herbs from short rootstocks with three leaves whorled at the summit of the stem and a solitary flower in their center. Perianth of two series, the outer three divisions green, the inner three colored. Stamens six, hypogynous. Anthers linear. Berry many seeded.

**1. T. sessile** L. WAKE-ROBIN. Leaves sessile, ovate: flower sessile, the sepals 6′–18′ long, spreading: petals erect-spreading, dull-purple.—In thickets. Rare and local. Westport, Kansas City and Grain Valley. April–May.

## FAMILY 23. SMILACEAE Vent.

Vines with alternate, petioled, netted-veined leaves and small green dioecious flowers in axillary umbels. Perianth segments and stamens six each. Pistils three. Stigmas three, sessile. Fruit a 3–6-seeded berry.

### 1. SMILAX Tourn.

With the characters of the family.

| | |
|---|---|
| Stems not prickly. | 1. *S. herbacea.* |
| Stems very prickly. | 2. *S. hispida.* |

**1. S. herbacea** L. CARRION FLOWER. 3°–15° high: leaves ovate or rounded or the upper lanceolate, 7–10-nerved: peduncles elongated, 3′–9′ long, longer than the petioles, 15–80-flowered: flowers carrion-scented.—In moist woods and thickets. Well scattered but uncommon. June.

Var. **pulverulenta** (Michx.) Gray. Leaves more or less pubescent beneath.—With the type and about as common.

**2. S. hispida** Muhl. GREENBRIER. High climbing: stems thickly covered with prickles: leaves ovate or heart-shaped, 7-nerved: peduncles 2–4 times the length of the petiole: umbels 10–25-flowered: berries bluish-black.—Common in woods and thickets. May–June.

## FAMILY 24. AMARYLLIDACEAE Lindl.

Herbs with perfect regular 6-androus flowers and linear root-leaves. Perianth adnate to the surface of the 3-celled ovary. Style single. Capsule 3-celled, few–many-seeded.

### 1. HYPOXIS L.

Low stemless herbs from solid bulbs. Scapes few-flowered. Stamens inserted on base of perianth segments. Anthers sagittate. Capsule indehiscent, many-seeded.

**1. H. erecta** L. STAR GRASS. 2′–8′ high, villous: scape 1–6-flowered: flowers yellow within, greenish and villous without, 4″ long.—Wet barrens and prairies throughout the southern part. Very abundant between Greenwood and Lee's Summit. May.

## Family 25. **DIOSCOREACEAE** Lindl.

Twining vines with large tuberous roots, petioled, cordate-ribbed and reticulate-veined leaves, and inconspicuous, greenish, dioecious, 6-androus flowers. Stamens 3 or 6. Ovary inferior, 3-celled, 3–6-ovuled. Stigmas and styles three each.

### 1. **DIOSCOREA** L.

Flowers in axillary racemes or panicles. Capsule 3-winged, loculicidally 3-valved.

**1. D. villosa** L. Wild Yam. Leaves alternate, cordate-acuminate slightly downy beneath: staminate flowers in drooping panicles, the fertile in drooping racemes: capsules strongly winged.—In thickets throughout. Well distributed, but not common. May–July.

## Family 26. **IRIDACEAE** Lindl.

Perennial herbs with equitant two-ranked leaves and perfect flowers. Perianth six-parted. Stamens 3, inserted on the perianth. Ovary inferior, 3-celled, with many ovules.

| | |
|---|---|
| Style branches broad and petal-like. | 1. *Iris.* |
| Style branches slender. | |
| Flowers $1\frac{1}{2}'$–$2'$ broad. | 2. *Gemmingia.* |
| Flowers less than $9''$ broad. | 3. *Sisyrinchium.* |

### 1. **IRIS** L. Blue Flag.

Perennials with creeping rootstocks and showy flowers. Perianth segments clawed, the three outer spreading, the inner erect. Styles petaloid, over-arching, bearing the stigmas under their 2-lobed apex. Capsule 3–6-angled.

| | |
|---|---|
| Flowers on tall stems. | 1. *I. versicolor.* |
| Flowers hidden among the leaves. | 2. *I. foliosa.* |

**1. I. versicolor** L. 2°–3° high: leaves somewhat glaucous: flowers $2\frac{1}{2}'$–$3'$ long, violet-blue, variegated with green, yellow or white: capsule 3-sided.—In swampy ground. Common from Adams to Lake City. May–June.

**2. I. foliosa** Mackenzie & Bush., n. sp. Stems flexuous: leaves often 2° long, not glaucous: flowers on pedicels $10''$–$14''$ long: perianth segments bluish, $2\frac{1}{4}'$ long, spreading, not crested: capsule strongly 6-angled.—Meadows and borders of low woods. Lake City, Adams, Glendale, Little Blue Tank and Greenwood. Locally abundant. June.

### 2. **GEMMINGIA** Fabr.

A tall perennial with *Iris*-like leaves and flowers in terminal panicles. Perianth divisions distinct nearly to summit of ovary. Stamens monadelphous at base, inserted at base of perianth segments. Anthers oblong. Capsule pear-shaped, the valves finally breaking and exposing the black fleshy seeds.

**1. G. Chinensis** (L.) Kuntze. BLACKBERRY LILY. Flowers reddish-orange, purple-mottled.—Thoroughly adventized on hillsides and along brooks. Leeds, Sibley, along Little Blue, etc. June–August.

### 3. SISYRINCHIUM L. BLUE-EYED GRASS.

Tufted perennials with linear grass-like leaves and fugacious umbellate flowers from a pair of green bracts. Perianth segments mostly aristate. Stamens monadelphous to near the top. Capsule globular, 3-angled.

| | |
|---|---|
| Flowers yellow. | 1. *S. flaviflorum.* |
| Flowers white or blue. | |
| Stems usually bearing 2 spathes. | 2. *S. graminoides.* |
| Stems bearing but one spathe. | 3. *S. campestris.* |

**1. S. flaviflorum** Bicknell. Lower bract very large: flowers clear lemon-yellow.—Frequent in post-oak woods southeast of Independence in two places. May.

**2. S. graminoides** Bicknell. Stems 10′–18′ high, broadly winged: leaves $1\frac{1}{2}''$ wide: lower bract 1–2 times length of upper: capsule $2''$–$2\frac{1}{2}''$ broad.—Rather frequent in shaded woods. May–June.

**3. S. campestris** Bicknell. Stems 7′–15′ high, somewhat winged: leaves $1''$ or less wide: lower bract twice length of upper: capsules $1\frac{1}{2}''$ broad.—Prairies and oak woods in the southern part, rather common. May.

## FAMILY 27. ORCHIDACEAE Lindl.

Herbs with perfect irregular flowers. Perianth of six divisions, the three outer (sepals) nearly sessile. Two of the inner (petals) differing from the third, which is called the lip. Anthers one (or two in *Cypripedium*) united with the style into the column. Anthers two-celled, containing 2–8 masses of pollen attached to a disk (gland). Ovary 1-celled, 3-angled, and filled with innumerable, sawdust-like ovules.

(The following key applies only to the species represented with us.)

| | |
|---|---|
| Lip forming a large inflated sac. | 1. CYPRIPEDIUM. |
| Lip not forming a large inflated sac. | |
| Flowers white. | |
| Lip long-fringed. | 3. HABENARIA. |
| Lip not long-fringed. | 5. GYROSTACHYS. |
| Flowers colored. | |
| Flowers numerous; leaf solitary. | 6. APLECTRUM. |
| Flowers numerous; leaves two. | 2. ORCHIS. |
| Flowers few. | 4. POGONIA. |

### 1. CYPRIPEDIUM L.

Flowers one to several, large and showy. Sepals and petals similar, spreading. Lip a large inflated sac. Column declined, bearing a stamen on each side and a dilated triangular body over the summit of the style. Stigma broad. Pollen granular.

**1. C. hirsutum** Mill. LADY'S SLIPPER. Hairy, 1°–$2\frac{1}{2}$° high: leaves many, oval: petals and sepals yellowish, purple-streaked: lip yellow.

—In rich woods, local. Dodson, Independence, Courtney, Sibley, Lee's Summit. Ours is mostly the form known as *C. parviflorum* Salisb. May.

### 2. ORCHIS L.

Flowers several, spiked. Sepals and petals about equal. Lip spurred beneath, turned downward, connate with base of column. Anther cells parallel. Pollen masses one in each cell, stalked, attached at base to disks (glands), the two disks contained in a common pouch.

**1. O. spectabilis** L. SHOWY ORCHIS. Leaves two, large, obovate: scape 4′–10′ high, 4-angled: flowers violet-purple, the lip white.—In rich woods. Rare. Courtney, Lake City and Sibley. May.

### 3. HABENARIA Willd.

Differs from *Orchis* in having glands not enclosed in a pouch and separate.

**1. H. leucophaea** (Nutt.) A. Gray. PRAIRIE ORCHIS. 1½°–3° high: leaves oblong-lanceolate: lip 6″–7″ long, 3-parted, copiously fringed: spur 1′–1½′ long—Uncommon on moist prairies. Adams, Little Blue Tank, Lee's Summit, Greenwood, Grand View, Levasy, Oak Grove. June.

### 4. POGONIA Juss.

Low, few-flowered herbs with equal erect petals and sepals. Lip not spurred. Column elongated, club-shaped at summit. Anther-sacs parallel. Pollinia one in each cell.

**1. P. trianthophora** (Sw.) B.S.P. NODDING LOG ORCHID. Stems 3′–8′ high, from tubers: leaves alternate, ovate-clasping, 3″–6″ long: flowers 1–4 in upper axils, 6″ long, whitish with pale purplish-white markings.—On logs in rich bottom woods; north of Courtney (1881); along the Blue south of Swope Park (1901). Very rare and local. August–September.

### 5. GYROSTACHYS Pers. LADIES' TRESSES.

Herbs from fleshy tubers with whitish flowers in 1–3-ranked spikes. Sepals somewhat coherent. Lip embracing the column and with two callosities at base. Column oblique. Stigma prolonged into an acuminate beak. Pollen masses one in each cell.

| | |
|---|---|
| Flowers three-ranked. | |
| Leaves oblong to oblong-lanceolate. | 1. *G. plantaginea.* |
| Leaves linear to linear-oblanceolate. | 2. *G. cernua.* |
| Flowers in one spirally-twisted rank. | |
| Stem leafy at base. | 3. *G. praecox.* |
| Stem not leafy at base. | 4. *G. gracilis.* |

**1. G. plantaginea** (Raf.) Britton. 4′–9′ high: leaves 2–5, basal, 1′–4′ long: spike 2′ long: callosities absent or minute.—Rare and local in rich woods near Courtney and Atherton. September.

**2. G. cernua** (L.) Kuntze. 6′–20′ high : leaves 4′–12′ long : spike 6′–7′ long : callosities prominent, hairy.—Occasional on a moist prairie south of Lee's Summit. August-September.

**3. G. praecox** (Walt.) Kuntze. 9′–24′ high : leaves linear, 4′–12′ long : spike dense, much-twisted, downy-pubescent, 2′–5′ long : callosities rather small.—Wet grassy places along Missouri River at Courtney. Rare. July–September.

**4. G. gracilis** (Bigel.) Kuntze. 8′–20′ high from tuberous thickened roots : leaves withering away before flowering time : spikes 1′–2½′ long : flowers very small : callosities nipple-shaped.—One plant in a dry open wood near Independence. September.

### 6. APLECTRUM Nutt.

Scapose herbs from thick, globular bulbs. Leaf solitary. Flowers bracted, in terminal racemes. Petals and sepals similar. Lip not spurred, 3-ridged. Pollinia four.

**1. A. spicatum** (Walt.) B.S.P. ADAM-AND-EVE. Leaf ovate, strongly-nerved : racemes several-flowered : flower 1′ long, greenish brown, speckled with purple.—In rich woods. Courtney to Sibley and Levasy. Rare and local. June.

## Subclass 2. DICOTYLEDONES.

Seeds with two cotyledons. Stems exogenous. Leaves usually pinnately veined, and parts of flowers not usually in threes or sixes.

### FAMILY 28. JUGLANDACEAE Lindl.

Trees with alternate, pinnate leaves and monoecious flowers. Staminate flowers in drooping, densely-flowered catkins, consisting of 3-many stamens surrounded by an unequally lobed calyx. Fertile flowers few or solitary, consisting of an inferior 2–4-celled, 1-ovuled and a regular 3–5-lobed calyx. Fruit a nut, enclosed in a husk.

| | |
|---|---|
| Stamens 8–40 ; husk indehiscent. | 1. JUGLANS. |
| Stamens 3–10 ; husk dehiscent. | 2. HICORIA. |

### 1. JUGLANS L.

Bark fragrant. Calyx of staminate flowers 3–6-lobed. Pistillate flowers with a 4-lobed calyx and 4 small petals. Nuts large, enclosed in a fibrous-fleshy husk.

**1. J. nigra** L. WALNUT. A large tree, sometimes 150° high : leaflets 7–11 pairs, lanceolate, pubescent beneath, serrulate : fruit spherical, the nut corrugated.—Abundant along streams. May–June.

### 2. HICORIA Raf.

Calyx of staminate flowers, unequally 2–3-lobed. Pistillate flowers with a 4-lobed calyx and no petals. Nuts enclosed in a dry, more or less completely 4-valved husk.

| | |
|---|---|
| Bark of tree close and rough. | |
| Leaflets 11 or more. | 1. *H. Pecan.* |
| Leaflets 9 or less. | |
| Branchlets glabrous. | |
| Husk of fruit strongly ridged. | 2. *H. minima.* |
| Husk not ridged. | 3. *H. villosa.* |
| Branchlets strongly pubescent. | 4. *H. alba.* |
| Bark of tree exfoliating in long narrow plates. | |
| Nut 6″–10″ long. | 5. *H. ovata.* |
| Nut 12″–18″ long. | 6. *H. laciniosa.* |

**1. H. Pecan** (Michx.) Britton. PECAN. Bud-scales valvate : leaflets usually 11, lanceolate to oblong-lanceolate, strongly falcate, glabrate : husk thin, tardily splitting, ridged; nut oblong-elliptic, not ridged, with thin shell : seed sweet.—Four trees along a creek southwest of Lone Jack. Reported elsewhere.

**2. H. minima** (Marsh.) Britton. PIGNUT. Bud-scales 6–8, valvate : leaflets usually 7, lanceolate to oblong-lanceolate, the lateral one falcate, strongly resinous and glandular beneath : husk thin, tardily splitting : nut-shell thin : seed bitter.—A common forest tree. May–June.

**3. H. villosa** (Sarg.) Ashe. PIGNUT. Bud-scales 6–8, imbricated, the outer resinous-dotted : leaflets 5–9, more or less pubescent and resinous-dotted : fruit obovoid, 1′ or more long, splitting nearly to the base : nut thin-shelled, angled.—Frequent in dry woods in the eastern part. May–June.

**4. H. alba** (L.) Britton. MOCKER-NUT. Bark fragrant : bud-scales 8–10, large, imbricated : leaflets 7–9, oblong-lanceolate to obovate : husk thick, soon splitting : nut thick-shelled, pointed at the summit.—A common forest tree. May–June.

**5. H. ovata** (Mill.) Britton. SHELL-BARK HICKORY. Bud-scales 8–10, imbricated : leaflets 5–7, oblong-lanceolate to obovate, very sparingly glandular beneath : husk thick, splitting soon : seed sweet.—A common forest tree. May–June.

**6. H. laciniosa** (Michx. f.) Sarg. KING-NUT. Like the last but leaflets 7–9, more downy, strongly glandular beneath: fruit 2′–3′ long, with a very thick husk: nut thick-shelled and pointed at both ends.—In rich bottoms throughout but never common. May–June.

## FAMILY 29. SALICACEAE Lindl.

Trees or shrubs with dioecious flowers in catkins, and alternate stipulate leaves. Flowers solitary in axils of bracts, without floral envelopes. Staminate flowers consisting of 1–many stamens, the pistillate of a 1-celled ovary, bearing many ovules on 2–4 parietal placentae. Stigmas 2. Style small or absent. Seeds provided with long silky down.

| | |
|---|---|
| Bracts lacerate ; stamens numerous. | 1. POPULUS. |
| Bracts entire ; stamens 2–10. | 2. SALIX. |

## 1. POPULUS L.

Trees with broad leaves. Buds scaly, resinous covered. Filaments distinct. Ovary sessile. Stigmas 2–4, elongated. Capsule 2–4-valved.

| | |
|---|---|
| Leaves white, tomentose beneath. | 1. *P. alba.* |
| Leaves green beneath. | 2. *P. deltoides.* |

**1. P. alba** L. SILVER-LEAF POPLAR. A tree often 100° high : leaves ovate-orbicular, sinuate toothed, white-tomentose beneath : capsules on short pedicels.—Cultivated and spreading by suckers. Independence, Raytown. April.

**2. P. deltoides** Marsh. COTTON-WOOD. 50°–150° high : leaves broadly deltoid, abruptly acuminate, crenulate : petiole laterally flattened : capsules long-pedicelled.—Common in river bottoms. April.

## 2. SALIX L. WILLOW.

Trees or shrubs with narrow leaves. Buds covered by a single scale. Filaments distinct or united. Ovary sessile or short stipitate. Stigmas 2, short. Capsule 2-valved.

| | |
|---|---|
| Catkins appearing after the leaves. | |
| Stamens three to five. | |
| Leaves green on both sides. | 1. *S. nigra.* |
| Leaves glaucous, whitened beneath. | |
| Leaves 7″ or less wide. | 2. *S. longipes.* |
| Leaves 6″–14″ wide. | 3. *S. amygdaloides.* |
| Stamens two. | |
| Leaves on petioles 2″–4″ long ; a tree. | 4. *S. alba vitellina.* |
| Leaves almost sessile : a shrub. | 5. *S. interior.* |
| Catkins appearing before the leaves. | |
| Capsule densely pubescent. | 6. *S. humilis.* |
| Capsule glabrous. | 7. *S. cordata.* |

**1. S. nigra** Marsh. BLACK WILLOW. 15°–100° high : leaves lanceolate, long-attenuate, downy when young, at length green and glabrous except on the veins beneath, serrulate : petioles 1″–3″ long : fruiting aments usually dense : capsules twice the length of their pedicels.—Common along streams. April–May.

**2. S. longipes** Shuttlw. A shrub or small tree : leaves lanceolate, long-acuminate, silvery-white and usually pubescent beneath, on petioles 1″–7″ long : aments loosely flowered : capsules on pedicels of nearly their own length.—Rocky beds of streams throughout the western half, but not abundant. April–May.

**3. S. amygdaloides** Anders. Like *S. longipes* but with broader, long-petioled, nearly glabrous leaves : stipules small : aments loose : capsules on long filiform pedicels.—Common along streams, especially in the Missouri bottoms. April–May.

**4. S. alba vitellina** (L.) Koch. WHITE WILLOW. 50°–90° high : leaves oblong-lanceolate, glabrous above when mature, whitish beneath, serrulate : aments closely flowered : capsules almost sessile.—Adventized occasionally near Sheffield and Independence. April–May.

5. **S. interior** Rowlee. SAND-BAR WILLOW. 2°–25° high: leaves linear, remotely denticulate, glabrous, or silky-pubescent in the young shoots: aments linear, cylindric, dense: capsules short-pedicelled, hairy when young.—Extremely abundant on sand-bars along the Missouri River. May–July.

6. **S. humilis** Marsh. LOW WILLOW. 2°–15° high: leaves oblanceolate, short-petioled, rugose-veined and more or less tomentose beneath, with nearly entire, revolute margins: aments dense, sessile, 1′ long, ovoid-oblong; capsule short-pedicelled.—Prairies and barrens throughout. Often abundant. March–April.

7. **S. cordata** Muhl. A shrub 5°–12° high, the twigs glabrous or puberulent: leaves oblong-lanceolate, acuminate, serrate: stipules large: pistillate aments 1½′–2½′ long, linear: capsule 3–4 times the length of its pedicel.—Along streams east of Independence, along Brush Creek, at Kansas City, etc. March–April.

Var. **Missouriensis** (Bebb) Mackenzie & Bush, n. comb. A shrub or tree 10°–50° high, often forming a large trunk with blackish bark: aments longer.—Common in rich soil along streams. Distinguished from the type by being larger throughout, more robust and having black bark. (*S. Missouriensis* Bebb.)

## FAMILY 30. **BETULACEAE** Agardh.

Trees or shrubs with alternate simple leaves and monoecious flowers mostly in aments. Staminate flowers in long drooping aments, 1–3 together in axils of bracts, consisting of 2–10 stamens and no calyx (in ours). Pistillate aments spike-like or capitate with a 2-celled, 2-ovuled ovary. Fruit a 1-seeded nut.

| | |
|---|---|
| Pistillate flowers in aments. | 1. OSTRYA. |
| Pistillate flowers capitate. | 2. CORYLUS. |

### 1. **OSTRYA** Micheli.

Small trees with very hard wood and leaves appearing after the flowers. Staminate flowers without bractlets at base. Nut small, enclosed in the large, inflated, oblong, sac-like bractlet.

1. **O. Virginiana** (Mill.) Willd. IRON WOOD. 50° or less high: leaves oblong-ovate, petioled, sharply-serrate, strongly-nerved, slightly downy beneath.—Common in woods throughout. April–May.

### 2. **CORYLUS** Tourn. HAZEL NUT.

Shrubs. Staminate flowers with two bractlets at base. Bractlets of pistillate flower two, enlarging in fruit and enclosing the ovoid, large, bony nut.

| | |
|---|---|
| Involucral bracts long-beaked. | 1. *C. rostrata.* |
| Involucral bracts not beaked. | 2. *C. Americana.* |

**1. C. rostrata** Ait. BEAKED HAZEL NUT. Like the next, but smoother: involucral bracts united and prolonged into a beak twice as long as the nut.—Thickets in the northeastern part. April.

**2. C. Americana** Walt. HAZEL NUT. 3°–10° high, with ovate, pointed, serrulate leaves, downy beneath: involucral bracts jagged and incised at the apex, hardly united, not prolonged into a beak.—A common under-shrub throughout. March–April.

## FAMILY 31. FAGACEAE Drude.

Trees or shrubs like the last, but pistillate flowers solitary or few, subtended by an involucre which in fruit forms a cup. Staminate flowers with a 4–7-lobed calyx, and 4–20 stamens. Ovary 3–7-celled, with 1–2 ovules in each, but only one ripening, in fruit forming a 1-seeded nut with a thick, bony husk.

### 1. QUERCUS L.

Trees with varied leaves. Staminate flowers in aments. Calyx of staminate flowers usually 6-lobed. Ovary 3-celled, 6-ovuled. Fruit consisting of an acorn, subtended by a scaly-covered, hard involucre (cup). Several interesting hydrids occur.

| | |
|---|---|
| Leaves lobed, the lobes bristle-tipped. | |
| Leaves pinnately lobed. | |
| Cups of acorns saucer-shaped. | |
| Cups 8″–12″ broad. | 1. *Q. rubra.* |
| Cups 5″–8″ broad. | 2. *Q. Texana.* |
| Cups of acorns hemispheric. | 3. *Q. velutina.* |
| Leaves 3–5-lobed above the middle. | 4. *Q. Marylandica.* |
| Leaves entire. | 5. *Q. imbricaria.* |
| Leaves lobed but not bristle-tipped. | |
| Leaves brown-tomentulose beneath. | 6. *Q. minor.* |
| Leaves not brown-tomentulose beneath. | |
| Old leaves glabrous beneath. | 7. *Q. alba.* |
| Old leaves pubescent beneath. | 8. *Q. macrocarpa.* |
| Leaves crenate or dentate but not lobed. | |
| Leaves whitish-downy beneath. | 9. *Q. platanoides.* |
| Leaves smoothish beneath. | |
| Tree: leaves oblong or lanceolate. | 10. *Q. acuminata.* |
| Shrub: leaves obovate. | 11. *Q. prinoides.* |

**1. Q. rubra** L. RED OAK. Leaves oval to obovate in outline, 3′–8′ long, 2′–6′ wide, slender-petioled, sinuate-pinnatifid to deeply pinnatifid, green and glabrous above when old, pubescent in axils of veins beneath: cup saucer-shaped, much broader than high, 8″–12″ broad: acorn ovoid, 1′ long, 2–4 times the length of the cup.—A common forest tree. April–May.

**2. Q. Texana** Buckley. TEXAS RED OAK. Like the last but leaves glabrous, pinnatifid and bristle-tipped, smaller: cup 5″–8″ broad: acorn less than 1′ long, 2–3 times length of the glabrous cup.—Along streams northeast of Independence and southeast of Grain Valley. Rare. April–May.

**3. Q. velutina** Lam. BLACK OAK. Leaves as in *Q. Texana* but usually pubescent below along the veins even when mature, and 5-sided in outline, sometimes smooth : cup hemispheric, its scale somewhat squarrose, yellowish floccose-pubescent: acorn 6″–12″ long, about twice the length of the cup.—A common tree, especially in the southern part. April–May. A form, common especially in the southern part, with leaves and petioles floccose-pubescent even in age and leaves intermediate between this species and *Q. Marylandica* is probably distinct.

**4. Q. Marylandica** Muench. BLACK JACK OAK. Leaves short-petioled, wedge-shaped at base, 3–5-lobed at the summit, the lobes toothed, rusty-pubescent beneath : cup 5″–8″ broad, deep, pubescent, half shorter than the acorn.—Common in barrens in the southern part. April–May.

**5. Q. imbricaria** Michx. SHINGLE OAK. Leaves lanceolate-oblong, thick, shining above and downy beneath, entire : cup 5″–7″ broad, acorn subglobose.—Common along streams. April–May.

**6. Q. minor** (Marsh.) Sarg. POST OAK. Leaves broadly obovate, yellowish-pubescent beneath, pinnatifid into 3–7 broad-toothed lobes : cup 6″–8″ broad, hemispheric, 1–3½ times shorter than the acorn.—Common in barrens, especially in the southern part. April–May.

**7. Q. alba** L. WHITE OAK. Leaves obovate, nearly glabrous, deeply sinuate-pinnatifid into 3–9, obtuse, often toothed lobes : cup 7″–10″ broad, depressed hemispherical. 1–3¼ times shorter than the acorn.—A common forest tree throughout. April–May.

**8. Q. macrocarpa** Michx. BUR OAK. Leaves broadly ovate, white-pubescent beneath, irregularly lobed or pinnate : cup 8″–20″ wide, deep, the scales subulate tipped and forming a mossy fringe, sometimes covering the acorn.—Common in rich soil. April–May.

**9. Q. platanoides** (Lam.) Sudw. SWAMP WHITE OAK. Leaves obovate, wedge-shaped at base, sinuate-crenate above, white-downy beneath: cup long-peduncled (2–5 times length of petiole), hemispheric: acorn oblong-ovoid.—In low grounds around Sheffield and south of Oak Grove. April–May.

**10. Q. acuminata** (Michx.) Sarg. CHESTNUT OAK. Leaves oblong-lanceolate, acute or acuminate, sharply toothed: petioles 6″–12″ long : cup hemispheric, 5″–8″ broad, peduncled or sessile: acorn ovoid, twice as high as the cup.—A tall tree, common throughout. April–May.

**11. Q. prinoides** Willd. CHINQUAPIN OAK. A shrub 2°–15° high, very close to the last, but leaves broader and less toothed, on petioles 3″–4″ long.—Common in barrens, especially in the southern part. April–May.

## FAMILY 32. ULMACEAE Mirbel.

Trees with alternate, stipulate leaves and clustered or solitary flowers. Calyx of 3–9 sepals. Stamens opposite sepals. Ovary superior, 1 celled. Ovule one, pendulous. Styles or stigmas two. Fruit a samara or drupe.

| | |
|---|---|
| Flowers preceding leaves; fruit a samara. | 1. ULMUS. |
| Flowers with leaves; fruit a drupe. | 2. CELTIS. |

### 1. ULMUS L.

Trees with serrate, strongly-veined, obovate, inequilateral leaves. Flowers perfect or polygamous, fascicled or racemose, on jointed pedicels. Samara winged all around.

| | |
|---|---|
| Flowers fascicled. | |
| Samara ciliate. | 1. *U. Americana.* |
| Samara smooth. | 3. *U. pubescens.* |
| Flowers racemose. | 2. *U. racemosa.* |

**1. U. Americana** L. WHITE ELM. Often 120° high; branches not corky-winged: leaves smoothish above: flowers long-pedicelled.—Common along streams. March–April.

**2. U. racemosa** Thomas. CORK ELM. Like the last: branches often corky-winged: samaras densely ciliate.—In rocky woods along the Missouri River bluffs from Kansas City to Little Blue River. March–April.

**3. U. pubescens** Walt. SLIPPERY ELM. Sometimes 70° high: twigs and bud-scales pubescent: leaves rough-pubescent above: flowers short pedicelled.—A common forest tree. March–April.

### 2. CELTIS Tourn. HACKBERRY.

Trees with pinnately-veined leaves and axillary polygamous flowers. Staminate flowers clustered. Fertile flowers one or two together and peduncled. Calyx 5–6-parted. Fruit a globular drupe.

| | |
|---|---|
| Leaves serrate. | 1. *C. occidentalis.* |
| Leaves entire. | 2. *C. Mississippiensis.* |

**1. C. occidentalis** L. A small or large tree with ovate or ovate-lanceolate, sharply serrate, inequilateral leaves: drupe 4″–5″ diameter.—Common along streams and bluffs. April–May.

**2. C. Mississippiensis** Bosc. A small tree with lanceolate-ovate, entire or nearly so, leaves: drupe 2½″–3″ in diameter.—In bottoms along the Missouri River near Courtney and Sibley and on rocky hills near Westport and Independence. Local. April–May.

Var. **pumila** (Pursh) Mackenzie & Bush, n. comb. 3°–8° high: leaves less taper pointed and drupe larger.—Rocky banks north of Lee's Summit. (*C. pumila* Pursh.)

## FAMILY 33. MORACEAE Lindl.

Flowers monoecious or dioecious, small, axillary and clustered. Calyx 4–5-parted, the stamens as many as its lobes. Ovary 1-celled, superior, 1-ovuled.

| | |
|---|---|
| Trees or shrubs. | |
| Leaves serrate. | 1. MORUS. |
| Leaves entire. | 2. TOXYLON. |
| A twining vine. | 3. HUMULUS. |
| An erect herb. | 4. CANNABIS. |

### 1. MORUS L.

Small trees with milky juice and alternate leaves. Flowers in catkin-like spikes. Sepals and stamens four. Calyx becoming succulent in fruit, and the whole pistillate spike thickening into a juicy, oblong fruit.

**1. M. rubra** L. MULBERRY. Leaves ovate, heart-shaped, acuminate, serrate, downy beneath.—Frequent throughout in rich soil. April–May.

### 2. TOXYLON Raf.

Small spiny trees with milky juice and alternate entire leaves. Pistillate flowers capitate, the staminate racemose. Sepals and stamens four. Calyces greatly enlarging in fruit, and forming a large, globular head.

**1. T. pomiferum** Raf. OSAGE ORANGE. Leaves ovate-lanceolate, thick and shining: fruit 2′–6′ in diameter.—Commonly used for hedges and often persistent after cultivation or spreading from the roots.

### 3. HUMULUS L.

Twining rough vines with opposite leaves. Staminate flowers panicled, the pistillate in drooping spikes. Sepals in staminate flowers and stamens five. Pistillate flowers two together in axils of foliaceous bract, and covered by a solitary sepal.

**1. H. Lupulus** L. HOP. Leaves heart-shaped at base, serrate or 3–5-lobed and serrate: calyx and achene resinous-aromatic.—Common in thickets along streams. July–October.

### 4. CANNABIS L.

A stout herb with alternate leaves and dioecious flowers. Staminate flowers panicled, composed of 5 sepals and 5 stamens. Pistillate flowers spiked, clustered, consisting of a large foliaceous calyx folded around the sessile ovary.

**1. C. sativa** L. HEMP. 4°–12° high: leaves digitately 5–11-cleft, the linear-lanceolate divisions toothed.—Common in waste places. July–September.

## FAMILY 34. URTICACEAE Reichenb.

Herbs with usually stipulate, petioled leaves and unisexual flowers. Calyx 2-5-cleft, the stamens as many as its lobes. Ovary superior, 1-celled, containing one erect ovule. Stigma simple. Fruit an achene.

| | |
|---|---|
| Leaves alternate. | |
| Herbs with stinging hairs. | 2. URTICASTRUM. |
| Herbs without stinging hairs. | 5. PARIETARIA. |
| Leaves opposite. | |
| Plant very glabrous. | 3. ADICEA. |
| Plant more or less hairy. | |
| Flowers in axillary compound panicles. | 1. URTICA. |
| Flowers glomerate in axillary spikes. | 4. BOEHMERIA. |

### 1. URTICA L.

Staminate flowers with a 4-parted calyx and four stamens. Pistillate calyx composed of four unequal segments, the two outer smaller. Herbs with stinging hairs.

**1. U. gracilis** Ait. SLENDER NETTLE. Sparingly stinging, 2°–8° high : leaves ovate lanceolate, sharply serrate, nearly glabrous.—Common in low grounds. June–October.

### 2. URTICASTRUM Fabr.

Staminate flowers with five sepals, five stamens and a rudimentary ovary. Pistillate calyx composed of four sepals, the outer two minute. Achene very oblique.

**1. U. divaricatum** (L.) Kuntze. WOOD NETTLE. 2°–4° high : leaves ovate, sharply serrate, long-petioled : flower clusters large and loose : ultimate branches of panicle wing-margined.—A very stinging herb, common in rich woods. July–October.

### 3. ADICEA Raf.

Staminate flowers with a 3–4-parted calyx, 3–4 stamens and a rudimentary ovary. Pistillate calyx composed of three sepals. Flowers in axillary clusters.

**1. A. pumila** (L.) Raf. CLEARWEED. Annual, 6′–20′ high, succulent : leaves slender-petioled, ovate, wedge-shaped at base, and coarsely dentate above.—Common in moist shaded woods. August–October.

### 4. BOEHMERIA Jacq.

Staminate flowers as in *Adicea*. Pistillate calyx tubular, entire, or 2–4-toothed, enclosing the ovary.

**1. B. cylindrica** (L.) Willd. FALSE NETTLE. A rough perennial, 1°–3° high : leaves ovate, 3-nerved, long-petioled, serrate, ciliate.—In low grounds near Lake City, Courtney and Sibley. Not common. July–October.

### 5. PARIETARIA L.

Staminate flowers as in *Adicea*. Pistillate calyx 4-lobed. Flowers intermixed in involucrate-bracted axillary clusters.

**1. P. Pennsylvanica** Muhl. PELLITORY. A low weak annual, 6′–12′ high with entire, 3-nerved, oblong-lanceolate, ciliate and dotted leaves : bracts 2–3 times the length of the flowers, ciliate.—Common in dry woods. May–October.

## FAMILY 35. SANTALACEAE R. Br.

Plants with entire leaves. Calyx 3–6-lobed, its lobes valvate. Stamens as many as calyx lobes and opposite them, inserted on a disk near their base. Ovary inferior, 1 celled, bearing 3–4 ovules, pendulous from the summit of the central placentae.

### 1. COMANDRA Nutt.

Herbs with alternate lanceolate leaves and perfect flowers in umbel-like clusters. Calyx 5-lobed. Anthers attached to calyx lobes by a tuft of hairs.

**1. C. umbellata** (L.) Nutt. BASTARD TOAD FLAX. 6′-18′ high : calyx greenish-white : fruit globular, urn-shaped.—Common on prairies and in dry woods, especially in the southern part. April–May.

## FAMILY 36. ARISTOLOCHIACEAE Blume.

Herbs with perfect flowers. Calyx valvate in bud and coherent with base of ovary, its limb 3-lobed. Ovary 6-celled, many-seeded. Stamens 6–12, epigynous.

| | |
|---|---|
| Stamens twelve. | 1. ASARUM. |
| Stamens six. | 2. ARISTOLOCHIA. |

### 1. ASARUM L.

Acaulescent perennials with long, running rootstocks, and few cordate-orbicular leaves. Flowers axillary, peduncled. Calyx regular.

**1. A. reflexum** Bicknell. WILD GINGER. Leaves orbicular-reniform, 2′–5′ across : sepals brownish-purple, 4″–5″ long, triangular, about the length of the tube, with a tip 1″–2″ long —Common in rich woods. April–May.

### 2. ARISTOLOCHIA L.

Caulescent perennials with alternate leaves and irregular flowers. Calyx tubular.

**1. A. Serpentaria** L. VIRGINIA SNAKEROOT. 6′–12′ high : leaves ovate-lanceolate, entire, cordate at base : flowers on slender basal scaly branches, the calyx bent like a letter S and enlarged at the throat and base.—In dry woods from Fairmount Park to Courtney. Not common. May–June.

## FAMILY 37. POLYGONACEAE Lindl.

Herbs with alternate leaves and sheathing stipules. Flowers perfect or dioecious. Calyx with 2–6 lobes. Stamens 2–12. Ovary superior, 1-celled, containing one ovule. Styles or stigmas 2–3. Fruit an achene.

| | |
|---|---|
| Sepals six. | 1. RUMEX. |
| Sepals five or four. | |
| Leaves hastate ; plants climbing. | 3. POLYGONUM. |
| Leaves hastate ; plants erect. | 2. FAGOPYRUM. |
| Leaves not hastate ; plants erect. | 3. POLYGONUM. |

### 1. RUMEX L.

Flowers in panicled racemes. Sepals six, the three outer not changed in fruit, the three inner usually enlarging and one or all bearing a tubercle at base. Stamens six, styles three. Stigmas tufted.

| | |
|---|---|
| Leaves hastate. | 1. *R. Acetosella.* |
| Leaves not hastate. | |
| Sepals bristle-bearing. | 8. *R. persicarioides.* |
| Sepals not bristle-bearing. | |
| Sepals 3″ broad or more in fruit. | 5. *R. Patientia.* |
| Sepals less than 3″ broad in fruit. | |
| Tubercle usually one. | |
| Sepals spiny. | 7. *R. obtusifolius.* |
| Sepals not spiny. | 4. *R. altissimus.* |
| Tubercles usually three. | |
| Leaves wavy-margined. | 6. *R. crispus.* |
| Leaves not wavy-margined. | |
| Pedicels about length of fruiting calyx. | 2. *R. salicifolius.* |
| Pedicels 3–5 times length of fruiting calyx. | 3. *R. verticillatus.* |

**1. R. Acetosella** L. SHEEP SORREL. Dioecious, 6′–15′ high: leaves lanceolate-hastate: fruit not winged.—Not uncommon in fields and waste places. May–June.

**2. R. salicifolius** Weinm. WHITE DOCK. Glabrous, 1°–5° high: leaves oblong-lanceolate.—Common on sand-bars along the Missouri River and in waste places. May–October.

**3. R. verticillatus** L. SWAMP DOCK. 3°–5° high: leaves lanceolate to oblong-lanceolate.—Frequent in swamps near Lake City and Sibley. May–August.

**4. R. altissimus** Wood. TALL DOCK. 2°–4° high, very glabrous: leaves oblong-lanceolate: pedicels about the length of the fruiting calyx.—Common in waste places and moist grounds. May–July.

**5. R. Patientia** L. PATIENCE DOCK. 3°–5° high: leaves large, the lower ovate-oblong, the upper oblong-lanceolate: pedicels 2–4 times the length of fruiting calyx: tubercle one.—Along the railroad near Pixley's Switch. Rare. Abundant near Argentine and Nearman, Kansas. May–July.

**6. R. crispus** L. CURLED DOCK. 1°–4° high: leaves lanceolate or oblong-lanceolate: pedicels 1–2 times the length of fruiting calyx.—Very abundant in waste places. May–July.

**7. R. obtusifolius** L. BITTER DOCK. 1°–4° high: leaves oblong-lanceolate, cordate or rounded at base: pedicels longer than fruiting calyx.—Common in waste places. May–July.

**8. R. persicarioides** L. RIVER DOCK. 8′–24′ high, pubescent: leaves long-lanceolate, wavy-margined: racemes leafy-bracted: flowers densely whorled: pedicels slightly longer than fruiting calyx: tubercles three.—Common on sand-bars along the Missouri River. May–October.

### 2. FAGOPYRUM Gaertn.

Annuals. Sepals five. Stamens eight. Styles three. Stigmas capitate. Achene triangular, longer than the calyx. Flowers in racemose panicles.

**1. F. esculentum** Moench. BUCKWHEAT. 1°–2° high, smoothish: flowers whitish: achene smooth.—Occasionally occurs along railroads and in waste places. July–August.

### 3. POLYGONUM L.

Herbs prostrate, erect or twining. Leaves continuous with or jointed to the stipules (ochreae). Calyx 4–5-parted. Stamens 5–9. Styles 2–3-parted or cleft. Fruit a lenticular or triangular achene. Probably includes several distinct genera.

Plants not twining.
  Flowers in terminal racemes. — I. Smartweed.
  Lower flowers, at least, in axillary clusters. — II. Knotweed.
Plants twining. — III.

I.

Calyx 5-parted.
  Ochreae not bristle-bearing.
    Perennials. — 1. *P. emersum.*
    Annuals.
      Peduncles almost smooth. — 2. *P. lapathifolium.*
      Peduncles very glandular.
        Style-branches barely exserted. — 3. *P. Pennsylvanicum.*
        Style-branches long-exserted. — 4. *P. longistylum.*
  Ochreae bristle-bearing.
    Racemes thick; not interrupted.
      Plant glabrous to puberulent. — 5. *P. Persicaria.*
      Plant hispid. — 9. *P. orientale.*
    Racemes slender; usually interrupted.
      Ochreae strigose. — 6. *P. hydropiperoides.*
      Ochreae smooth.
        Racemes usually drooping. — 7. *P. Hydropiper.*
        Racemes erect. — 8. *P. punctatum.*
Calyx 4-parted. — 10. *P. Virginianum.*

II.

Plants prostrate. — 11. *P. aviculare.*
Plants erect or ascending.
  Leaves oblong or oval. — 12. *P. erectum.*
  Leaves lanceolate to linear.
    Achene twice the length of the calyx. — 13. *P. exsertum.*
    Achene enclosed, or nearly so, by calyx.
      1° or more high. — 14. *P. ramosissimum.*
      1° or less high. — 15. *P. tenue.*

III.

Stems not prickly.
  Calyx not wing-margined in fruit. — 16. *P. Convolvulus.*
  Calyx strongly wing-margined in fruit. — 17. *P. scandens.*
Stems prickly. — 18. *P. sagittatum.*

**1. P. emersum** (Michx.) Britton. 1°–3° high, usually hairy: leaves ovate-lanceolate: spikes 1–2, 1′–3′ long: flowers bright rose color.—Common in swampy ground.

**2. P. lapathifolium** L. 1°–3° high, smooth: leaves lanceolate, 2′–5′ long: spikes erect, 1′–2′ long: flowers white or pink: stamens 6.—Infrequently occurs in waste places.

Var. **incarnatum** (Ell.) S. Wats. Much larger, often 5° high: leaves often 8′ long and spikes 2′–3′ long, somewhat nodding.—Common in open moist ground.

**3. P. Pennsylvanicum** L. Like the last, but peduncles and pedicels very glandular, glabrous below: spikes oblong, dense, 1′–2′ long: stamens 8.—Very abundant in low grounds.

**4. P. longistylum** Small. Resembles *P. Pennsylvanicum*, but the spikes are longer (1′–4′ long) and less dense, the calyx is larger, and the styles are long-exserted.—Low grounds near Atherton. Local.

**5. P. Persicaria** L. Peduncles and pedicels not glandular and ochreae fringed with short bristles. Otherwise closely resembles *P. Pennsylvanicum*.—Frequent in waste places. July–October.

**6. P. hydropiperoides** Michx. Perennial, 1°–3° high, glabrous or strigillose: leaves narrowly lanceolate: ochreae fringed with long bristles: spikes erect, slender and usually interrupted below: achene sharply triangular.—Wet prairies near Lake City and Sibley. Locally common. July–October.

**7. P. Hydropiper** L. Annual, 1°–2° high, smooth: leaves lanceolate, punctate: ochreae fringed with short bristles: spikes nodding, slender and interrupted: achene triangular or lenticular: stamens 4 or 6.—In waste places. Not uncommon. July–September.

**8. P. punctatum** Ell. Annual or perennial, 1°–4° high, smooth: leaves lanceolate, punctate: ochreae fringed with long bristles: spikes erect, loosely flowered: achene triangular or lenticular.—Rather common in wet woods.

Var. **leptostachyum** (Meisn.) Small. Plant smaller: spikes much interrupted and more loosely flowered.—Very common in damp woods.

**9. P. orientale** L. 3°–8° high, hispid: leaves broadly ovate, acuminate: ochreae short-ciliate: spikes numerous, dense and finally drooping: flowers large, rose-colored.—Rarely escaped from gardens near Independence, Lone Jack and Adams. August–October.

**10. P. Virginianum** L. Annual, 2°–5° high, nearly smooth, but ochreae strigose: leaves ovate, acuminate: spikes very long, slender and interrupted: flowers greenish-white.—Common in rich woods. August–October.

**11. P. aviculare** L. Prostrate and widely spreading: leaves oblong to lanceolate, acutish, 3″–10″ long: ochreae silvery: flowers small: style 3-parted to near the base: stamens 5–8.—Abundant in waste places.

Var. **littorale** (Link.) Mackenzie & Bush, n. comb. Leaves obtusish, and style 3-parted at the base.—Common in waste places. (*P. littorale* Link.)

**12. P. erectum** L. Stout, erect, 1°–2° high: leaves oval to oblong, 6″–20″ long, rather obtuse: stamens usually six: achene included or almost so.—Common in woods and waste grounds. August–October.

**13. P. exsertum** Small. Annual, 1°–3° high: leaves lanceolate, acute, short-petioled: stamens 5–6: achene 2–3 times the length of the calyx.—Muddy banks of Rock Creek near its mouth, and near Independence. Not common. August–September.

**14. P. ramosissimum** Michx. Annual, 1°–4° high: leaves linear-lanceolate, acute, short-petioled: stamens 6: achene sometimes slightly exserted.—Common in open grounds. August–September.

**15. P. tenue** Michx. Annual, 4′–12′ high, slender: leaves linear-lanceolate, acute, short-petioled: flowers erect: stamens 8: achene included.—On wet hillsides north of Lee's Summit and south of Grain Valley. Local. July–September.

**16. P. Convolvulus** L. CLIMBING BUCKWHEAT. Annual, twining or procumbent, scurfy: leaves ovate-sagittate: flowers in pedicelled clusters: outer calyx lobes keeled, but not winged.—Frequent in waste places and along railroads. June–August.

**17. P. scandens** L. CLIMBING BUCKWHEAT. Perennial, strongly climbing, smooth: leaves ovate cordate at base, long-petioled: racemes numerous, panicled and leafy: outer calyx lobes strongly winged, 5″–6″ long.—Abundant in thickets. July–October.

**18. P. sagittatum** L. TEAR THUMB. Annual: stems climbing, thickly covered with sharp-reflexed prickles: leaves lanceolate-sagittate, short-petioled: flowers in capitate clusters.—In bogs near Buckner and Sibley. Locally abundant. July–October.

## FAMILY 38. CHENOPODIACEAE Dumort.

Weedy herbs with alternate, non-stipulate leaves. Flowers small, greenish, without scarious bracts. Calyx 2–5-lobed or parted, or of but one sepal. Stamens as many as calyx lobes, or sometimes fewer. Ovary superior, 1-celled, 1-ovuled. Styles or stigmas 1–5. Fruit a utricle, with a thin or thick covering (pericarp).

Leaves not rigid and spiny tipped.
  Pistillate flowers not enclosed by bractlets.
    Sepals three to five.
      Fruiting calyx strongly winged. — 2. CYCLOLOMA.
      Fruiting calyx not strongly winged.
        Leaves not linear and ciliate. — 1. CHENOPODIUM.
        Leaves linear and ciliate. — 5. KOCHIA.
    Sepals solitary.
      Leaves toothed. — 3. MONOLEPIS.
      Leaves entire. — 6. CORISPERMUM.
  Pistillate flowers enclosed by two bractlets. — 4. ATRIPLEX.
Leaves rigid and spiny tipped. — 7. SALSOLA.

### 1. CHENOPODIUM L.

Weeds with perfect sessile flowers in panicled clusters. Sepals and stamens each 3–5. Styles 2–3. Calyx lobes enveloping the fruit, which is enclosed by a thin covering (pericarp).

Plants not glandular nor aromatic.
  Pericarp easily separated from the seed.
    Calyx lobes barely keeled. 2. *C. Boscianum.*
    Calyx lobes strongly keeled.
      Leaves linear to oblong. 3. *C. leptophyllum.*
      Leaves triangular-hastate. 4. *C. Fremontii incanum.*
  Pericarp separated from seed with difficulty.
    Leaves coarsely 2-8-toothed. 8. *C. hybridum.*
    Leaves sinuate to incised.
      Sepals strongly keeled. 1. *C. album.*
      Sepals not keeled in fruit.
        Leaves white-glaucous beneath. 7. *C. glaucum.*
        Leaves green on both sides.
          Seeds with rounded margins. 5. *C. urbicum.*
          Seeds with acute margins. 6. *C. murale.*
Plants glandular or aromatic.
  Leaves sinuate-pinnatifid. 9. *C. Botrys.*
  Leaves repand-dentate to incised.
    Flowers in leafy spikes. 10. *C. ambrosioides.*
    Flowers in leafless spikes. 11. *C. anthelminticum.*

**1. C. album** L. PIGWEED. Erect annual, 6′–10° high, mealy: leaves rhombic-ovate to linear-lanceolate, at least the lower usually angulate-toothed, acuminate to obtuse: spikes in terminal clusters.—Abundant in waste places. May–November. A form with linear entire leaves occurring in the southern part and apparently native may be distinct.

Var. **viride** (L.) Moq. Plant not mealy: leaves obtuse or acute.—Infrequent in waste places.

Var. **Berlandieri** (Moq.) Mackenzie & Bush, n. comb. Plant not mealy: leaves cuspidate or bristle-tipped.—Abundant in waste places. (*C. Berlandieri* Moq.)

**2. C. Boscianum** Moq. WOOD PIGWEED. 1°–4° high, not mealy: leaves oblong-lanceolate, slender-petioled, nearly entire: flowers in slender, terminal spikes on widely diverging branches.—Common in woods and thickets. July–October.

**3. C. leptophyllum** (Moq.) Nutt. NARROW-LEAVED PIGWEED. Annual, 6′–30′ high, more or less mealy: leaves linear to oblong-linear, entire: branches erect: flowers densely clustered.—Infrequent along railroads and in sandy soil throughout. May–October.

Var. **oblongifolium** S. Wats. Leaves oblong.—With the type but much more common.

**4. C. Fremontii incanum** S. Wats. PRAIRIE PIGWEED. Annual, about 6′ high, erect, mealy: leaves broadly triangular-hastate, sinuate-dentate, densely mealy on both sides: spikes slender, axillary and terminal.—Has been found as a waif at Courtney: also at Armstrong, Kansas. July–September.

**5. C. urbicum** L. CITY PIGWEED. Dull green annual, 1°–3° high, not mealy, erect: leaves triangular-ovate, irregularly dentate: spikes terminal and axillary, the upper longer than the leaves.—Waste places in Kansas City and Sheffield. Not common. June–September.

**6. C. murale** L. SOWBANE. Resembles the last but usually decumbent: leaves more sharply toothed: spikes not longer than the leaves — Streets of Westport and Independence. Locally common. June–September.

**7. C. glaucum** L. SPREADING PIGWEED. Glaucous-mealy, spreading: leaves oblong, sinuate-toothed, strongly glaucous-mealy beneath: flowers in small axillary spikes.—Sand-bars along the Missouri River near Courtney. Rare. June–October.

**8. C. hybridum** L. MAPLE-LEAVED PIGWEED. 2°–8° high: leaves large, thin, ovate, truncate or rounded at base, long-acuminate, with 1–4 deep teeth on each side: flowers in large diffuse panicles.—Abundant in woods and waste places throughout. July–October.

**9. C. Botrys** L. FEATHER GERANIUM. Annual, 6′–24′ tall, glandular-pubescent and viscid: leaves slender-petioled, oblong, sinuate-pinnatifid: flowers small, in axillary, cymose, leafless panicles.—Streets of Independence, and at Sheffield. Rare. June–September.

**10. C. ambrosioides** L. MEXICAN TEA. Nearly smooth, but strongly-scented, 2°–4° high: leaves oblong-lanceolate, repand-dentate, short-petioled: flowers in dense axillary and terminal leafy spikes.—Common around dwellings. July–October.

**11. C. anthelminticum** L. WORMSEED. Resembles the last but leaves more strongly toothed and spikes not leafy.—Around dwellings at Courtney, Independence and near Atherton, July–October.

### 2. CYCLOLOMA Moq.

A diffusely branching annual with alternate, sinuate-toothed leaves. Calyx 5-lobed, the lobes strongly keeled, surrounded by a continuous, horizontal, scarious wing.

**1. C. atriplicifolium** (Spreng.) Coult. WINGED PIGWEED. 6′–3° high: leaves somewhat arachnoid-pubescent.—Sandy places in the Missouri River bottoms. Rather common. July–October.

### 3. MONOLEPIS Schrad.

Low annuals with flowers in axillary sessile clusters. Sepal 1. Stamen 1. Styles 2.

**1. M. Nuttalliana** (R. & S.) Greene. 3′–12′ high, prostrate-spreading: leaves lanceolate, 3-lobed, the middle lobe much the longest: flowers sessile.—Sparingly adventized along the railroad near Pixley's Switch; also at Argentine, Kansas. April–September.

### 4. ATRIPLEX L.

Flowers dioecious or monoecious, axillary or in spikes. Staminate flowers with 3–5 sepals, 3–5 stamens, and no bracts. Pistillate flowers consisting of a solitary pistil, enclosed in two foliaceous bracts.

**1. A. hastata** L. SPREADING ORACHE. Rather spreading, 1°–2° high, scurfy : leaves broadly triangular-hastate, nearly entire : flowers in panicled, interrupted leafless spikes, or axillary : sides of fruiting bractlets tubercled.—In waste places at Westport, Independence and Greenwood. Uncommon. July-October.

### 5. KOCHIA Roth.

Erect herbs with narrow, entire leaves and flowers in axillary clusters. Calyx 5-lobed, membranous, somewhat winged in fruit. Embryos of seed annular.

**1. K. Scoparia** (L.) Roth. Annual, 1°–3° high, pubescent above : utricle usually flat.—Along Independence Ave., Kansas City, near east end of car line. A few clumps. August–October.

### 6. CORISPERMUM L.

Much branched herbs, with flowers solitary in axils of the upper bract-like leaves, and forming dense terminal spikes. Calyx of a solitary, thin sepal. Stamens 1–3. Pericarp adherent to seed.

**1. C. hyssopifolium** L. BUG SEED. 1°–3° high : lower leaves linear, the upper ovate-lanceolate.—Sand-bars along the Missouri River near Courtney. Rare. Also opposite Kansas City in Clay County. July–September.

### 7. SALSOLA L.

Flowers perfect, sessile, 2-bracteolate. Calyx 5-parted, appendaged by a broad horizontal wing. Stamens 5. Styles 2.

**1. S. Tragus** L. RUSSIAN THISTLE. A bushy branched annual : leaves succulent, awl-shaped, very prickly pointed.—Along railroad at Sheffield. Not common and shows little tendency to spread. May–October.

## FAMILY 39. AMARANTHACEAE J. St. Hil.

Herbs with alternate or opposite leaves. Flowers in terminal spikes, scarious-bracted at base. Calyx 2–5-parted. Stamens 1–5. Ovary 1-celled, 1-ovuled. Stigmas 1–3. Fruit a utricle.

Leaves alternate.
  Calyx lobes 3–5. — 1. AMARANTHUS.
  Calyx of perfect flowers absent. — 2. ACNIDA.
Leaves opposite. — 3. FROELICHIA.

### 1. AMARANTHUS L.

Weeds with monoecious, polygamous or dioecious flowers in dense terminal spikes or axillary clusters, 3-bracted at base. Calyx of distinct sepals. Fruit beaked by persistent styles. Leaves awn-tipped.

Upper flowers in dense terminal spikes.
  Leaves not spiny in axils.
    Flowers polygamous.
      Spikes stout. — 1. *A. retroflexus.*

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| Spikes slender. | 2. *A. hybridus.* |
| Flowers dioecious. | 6. *A. Palmeri.* |
| Leaves with two spines in axils. | 3. *A. spinosus.* |
| Flowers in small axillary clusters. | |
| Plant prostrate-spreading. | 4. *A. blitoides.* |
| Plant erect-ascending. | 5. *A. graecizans.* |

**1. A. retroflexus** L. ROUGH PIGWEED. 1°–10° high, roughish-puberulent: leaves ovate, entire or undulate, long-petioled: flowers greenish, in dense terminal and axillary spikes: spikes ovoid-cylindric, compound and often densely clustered: bracts awn-pointed: utricle circumscissile. —A common weed in waste places. July–October.

**2. A. hybridus** L. SLENDER PIGWEED. Like the last but spikes linear-cylindric, somewhat narrower, flexuous and not densely clustered. —Also abundant in waste places. July–October.

Var. **paniculatus** (L.) Uline & Bray. Flowers and leaves tinged with red.—Well distributed in waste places but not common. July–October.

**3. A. spinosus** L. SPINY PIGWEED. Bushy-branched, 1°–4° high: leaves rhombic-lanceolate, long-petioled, with a pair of stout spines in their axils: flowers monoecious: spikes long and slender: utricle imperfectly circumscissile.—In waste places. Rather common. June–October.

**4. A. blitoides** S. Wats. CREEPING PIGWEED. Widely prostrate-spreading: leaves spatulate, petioled: flower clusters small: bract short, acuminate: utricle circumscissile.—Abundant in waste places. June–October.

**5. A. graecizans** L. TUMBLE WEED. Resembles the last, but erect-spreading: bracts subulate, rigid, pungent-pointed.—Frequent in waste places throughout. June–October.

**6. A. Palmeri** S. Wats. 2°–5° high, puberulent above: leaves ovate-lanceolate, blunt at the apex, long-petioled: flowers dioecious, borne in slender spikes: bracts subulate, spiny-awned: utricle indehiscent.—Rarely adventized along railroad at Wayne City. Also at Argentine, Kansas. August–October.

### 2. ACNIDA L.

Closely resembles *Amaranthus*, save that the calyx is absent in the pistillate flowers. Plants dioecious.

**1. A. tamariscina** (Nutt.) Wood. WATER HEMP. 6′–10° high: erect to postrate-spreading, usually much-branched: leaves ovate-lanceolate, long-petioled: flowers in long spikes and in axillary clusters: utricle circumscissile, usually somewhat angled and tubercled, membranous.—Abundant in low grounds especially on sand-bars along the Missouri River. June–November. Very variable.

Var. **tuberculata** (Moq.) Uline & Bray. Tall and erect with spicate inflorescence and a tubercled, indehiscent utricle.—Frequent with the type.

### 3. FROELICHIA Moench.

Annuals with perfect 3-bracted flowers in densely panicled spikes. Calyx very woolly, tubular, 5-cleft, longitudinally crested. Stamens 5, their filaments united. Utricle indehiscent.

**1. F. Floridana** (Nutt.) Moq. WOOLLY PIGWEED. Erect, 1°–5° high : leaves oblong-lanceolate, silky pubescent beneath : flowers very white-woolly.—Adventized along railroad near Courtney. Uncommon. July–September.

## FAMILY 40. PHYTOLACCACEAE Lindl.

Herbs with alternate entire leaves and perfect flowers. Sepals 5. Stamens 5 or more. Ovary superior, several-celled, with one ovule in each cell. Styles as many as the cells.

### 1. PHYTOLACCA L.

Flowers in terminal bracteolate racemes. Ovary composed of 5–15 somewhat united carpels, in fruit forming a berry.

**1. P. decandra** L. POKE BERRY. 3°–12° high, glabrous : leaves oblong-lanceolate, large : stamens 10 : calyx white.—A common weed in low grounds, waste places, etc. June–October.

## FAMILY 41. NYCTAGINACEAE Lindl.

Herbs with opposite entire leaves and regular flowers in terminal or axillary clusters, subtended by a calyx-like involucre. Calyx inferior, petal-like, tubular or funnelform, 4–5-lobed. Stamens hypogynous. Ovary 1-celled, 1-ovuled, enclosed by persistent base of calyx.

### 1. ALLIONIA Loefl. UMBRELLA-WORT.

Involucres axillary or in large terminal panicles, 4–5-lobed, 3–5-flowered. Stamens three. Fruit strongly ribbed.

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| Leaves broadly ovate. | 1. *A. nyctaginea.* |
| Leaves oblong-lanceolate to linear-lanceolate. | |
| Stem glabrous below. | 2. *A. albida.* |
| Stem hairy below. | 3. *A. hirsuta.* |
| Leaves long-linear. | 4. *A. linearis.* |

**1. A. nyctaginea** Michx. 1°–4° high, stem much branched : leaves petioled, ovate, cordate or rounded at base.—Common in rocky woods and along railroads. May–September.

Var. **ovata** (Pursh) Morong. Leaves oblong-ovate, tapering to the base, not at all cordate.—Rarely adventized along railroad south of Little Blue Tank. May–September.

**2. A. albida** Walt. 1°–5° high, not bushy-branched, whitish and glabrous below : inflorescence viscid-pubescent : leaves oblong-lanceolate to linear-lanceolate, nearly sessile : flowers sometimes all axillary.—Frequent in barrens throughout. May–September.

**3. A. hirsuta** Pursh. Closely resembles the last, but glandular-pubescent all over.—Barrens west and north of Lee's Summit. May–September.

**4. A. linearis** Pursh. 1°–5° high, glaucous: leaves narrowly linear: inflorescence puberulent.—Adventized along railroads. Atherton to Sheffield; Hickman's Mills. Infrequent. May–September. *A. Bushii* Britton is but a depauperate form of this species.

## Family 42. AIZOACEAE A. Br.

Prostrate herbs with small regular flowers. Calyx 4–5-parted. Stamens perigynous. Ovary 3–5-celled, many-ovuled. Fruit a capsule.

### 1. MOLLUGO L.

Flowers axillary. Sepals 5. Petals none. Stamens 3–5. Ovary 3-celled and stigmas 3. Stipules scarious, deciduous.

**1. M. verticillata** L. Carpet Weed. Leaves linear-spatulate, in whorls of 5–6: flowers on slender pedicels, 1″ broad.—Usually common along railroads and in sandy grounds. June–October.

## Family 43. PORTULACACEAE Reichenb.

Herbs with regular unsymmetrical flowers. Sepals 2. Petals 4–5. Stamens equalling petals or more numerous. Ovary 1-celled, with few to many ovules. Style 2–3-cleft. Capsule circumscissile or dehiscent by three valves.

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| Flowers cymose-paniculate. | 1. Talinum. |
| Flowers in terminal racemes. | 2. Claytonia. |
| Flowers axillary. | 3. Portulaca. |

### 1. TALINUM Adans.

Erect perennial herbs with alternate terete leaves and cymose-paniculate flowers. Capsule three-valved.

**1. T. calycinum** Engelm. Flame Flower. 4′–12′ high: leaves basal, clustered: cymes compound: flowers 1′ broad, pink: sepals persistent: stamens 12–30.—On almost naked limestone rocks at Greenwood and south of Oak Grove. Abundant in two small localities. May–September.

### 2. CLAYTONIA L.

Herbs with flowers in terminal racemes. Sepals persistent. Stamens and petals 5 each.

**1. C. Virginica** L. Spring Beauty. 6′–12′ high from a deep solid tuber: leaves few, linear-lanceolate: flowers pinkish, with darker veins, ½′–1′ broad.—Very abundant in moist rocky woods. April–May.

### 3. PORTULACA L.

Prostrate herbs with sessile terminal flowers: petals usually 5, and stamens 7–many, inserted on calyx. Capsule dehiscent by a lid.

Flowers yellow.
Plants prostrate : stamens 6–10. 1. *P. oleracea.*
Plants ascending : stamens 12–18. 2. *P. neglecta.*
Flowers red. 3. *P. pilosa.*

**1. P. oleracea** L. Stems short and small, prostrate, pale : leaves small, 4″–10″ long, thickish and fleshy, obovate or cuneate, rounded at the apex : flowers small, deep yellow, 2″–3″ broad, opening in bright sunshine at about 9:30 A. M. : style 4–6-parted : stamens 6–10 : capsule 3″–5″ long : seeds finely rugose.—In fields and waste places. Not very common. Naturalized from Europe. Summer and autumn.

**2. P. neglecta** Mackenzie & Bush, sp. nov. Stems long and thick, erect or ascending, bright reddish-purple : leaves very large, 6″–25″ long, thin, broadly obovate or oblanceolate, rounded and obtuse or retuse at apex : flowers larger, 3″–6″ broad, pale yellow, the petals deeply 2-cleft, opening in direct sunshine at about 7:45 A. M. : style 3–4-parted : stamens 12–18 : capsule 4″–6″ long : seeds under a lens distinctly tuberculate, blackish, about .35″ long.—Abundant in rich soil in bottoms and on prairies. Grows in large patches, single plants sometimes being four feet across. Summer and autumn.

**3. P. pilosa** L. Pilose pubescent with tufts of hair in axils of leaves: leaves linear, terete.—Occurs locally in barrens. Brush Creek, Dodson, Martin City, Raytown, Greenwood, Tarsney. Abundant at times. July–September.

## Family 44. CARYOPHYLLACEAE Reichenb.

Herbs with opposite or apparently verticillate leaves and perfect, regular flowers. Sepals 4–5, separate or united. Petals 4–5, or none. Stamens twice as many as petals or less. Styles 2–5. Ovary usually 1-celled (rarely 3–5-celled). Ovules attached to a central column.

Sepals united into a tube.
Styles two.
Calyx tubular. 4. Saponaria.
Calyx sharply 5-angled. 5. Vaccaria.
Styles three. 2. Silene.
Styles five.
Sepals much exceeding petals. 1. Agrostemma.
Sepals shorter than petals. 3. Lychnis.
Sepals distinct or nearly so.
Stipules wanting.
Petals deeply 2-cleft or 2-parted.
Styles three. 6. Alsine.
Styles five. 7. Cerastium.
Petals entire or emarginate.
Petals notched at apex. 8. Arenaria.
Petals not notched at apex. 9. Moehringia.
Stipules present.
Leaves whorled. 10. Spergula.
Leaves opposite. 11. Anychia.

### 1. AGROSTEMMA L.

Calyx lobes long and foliaceous, its tube 10-ribbed. Petals emarginate. Stamens 10.

**1. A. Githago** L. CORN COCKLE. Annual, 1°–3° high, densely hairy: leaves linear-lanceolate : petals red.—Along railroads and in wheat fields. Rather rare. July–September.

### 2. SILENE L.

Calyx 5-toothed, 10-many-nerved. Stamens 10. Petals clawed. Pod opening by 3 or 6 apical teeth.

Leaves in fours. 1. *S. stellata.*
Leaves opposite.
Petals pink. 2. *S. antirrhina.*
Petals white. 3. *S. noctiflora.*

**1. S. stellata** (L.) Ait. STARRY CAMPION. $1\frac{1}{2}$°–$3\frac{1}{2}$° high, minutely pubescent : leaves ovate-lanceolate : flowers in large terminal panicles : petals white, fringed : flowers 9″ broad.—Rather common in dry woods throughout. June–July.

**2. S. antirrhina** L. SLEEPY CATCH-FLY. 6′–30′ high, glabrous, but glutinous between the joints : leaves linear-lanceolate : flowers small, in a terminal panicle : petals obcordate, opening in sunshine.—Common on open rocky hillsides. April–June.

Var. **divaricata** Robinson. Very slender and weak : leaves linear : branches filiform : petals none.—In moist rocky woods throughout but less common than the species.

**3. S. noctiflora** L. NIGHT-FLOWERING CATCH-FLY. 2°–3° high, viscid hairy : leaves oblanceolate : flowers large : petals two-cleft.—Waste places in Kansas City and Independence and near Wayne City. Rare.

### 3. LYCHNIS L.

Calyx 5-toothed, 10-nerved. Stamens 10. Pod opening by about 10 apical teeth.

**1. L. alba** Mill. WHITE CAMPION. 1°–2° high, viscid-pubescent : leaves ovate-lanceolate : flowers loosely paniculate : petals white, 2-cleft.—Waste places in Kansas City. Rare. June–October.

### 4. SAPONARIA L.

Calyx 5-toothed, obscurely nerved. Stamens 10. Petals appendaged at base of blade. Capsule opening by four apical teeth.

**1. S. officinalis** L. BOUNCING BET. A glabrous perennial, 1°–2° high : leaves ovate-lanceolate : flowers pinkish, in dense corymbed leafy clusters.—Locally common along streets and railroads.

### 5. VACCARIA Medic.

Calyx sharply 5-angled in fruit : petals not appendaged at base of blade. Otherwise as in *Saponaria*.

**1. V. vulgaris** Host. COW HERB. A smooth annual, 1°–3° high with ovate-lanceolate leaves and rather small reddish flowers in loose cymes.—Occurs occasionally in waste places, especially along railroads at Sheffield. June.

### 6. ALSINE L.

Diffuse annuals. Stamens 10 or less. Styles usually three. Pod 1-celled, several–many-ovuled, and usually 6-valved.

**1. A. media** L. CHICKWEED. Stems spreading, hairy: leaves ovate, the lower long-petioled: flowers axillary or terminal, slender-pedicelled: petals shorter than sepals.—Locally well adventized in gardens in Kansas City and Independence. May–October.

### 7. CERASTIUM L. CHICKWEED.

Flowers cymose. Stamens 10 or less. Pod 1-celled, many-ovuled, 10-valved.

| | |
|---|---|
| Petals not longer than sepals. | 1. *C. vulgatum.* |
| Petals longer than sepals. | |
| Pedicels 3–7 times as long as calyx. | 2. *C. longipedunculatum.* |
| Pedicels 1–2 times as long as calyx. | 3. *C. brachypodum.* |

**1. C. vulgatum** L. Annual, 4′–12′ long, spreading, hairy: leaves oblong: pedicels longer than calyx.—Common in woods and fields. April–June.

**2. C. longipedunculatum** Muhl. Annual, 6′–30′ high, erect or ascending, more or less clammy-pubescent: leaves oblong-lanceolate, 1′–2′ long: cyme open, many-flowered.—Abundant in moist woods. April–June.

**3. C. brachypodum** Engelm. Like the last but usually smaller: leaves 3″–12″ long: cymes more compact.—Common in barrens and rocky prairies throughout the southern part. April–June.

### 8. ARENARIA L.

Flowers terminal, cymose. Stamens 10. Styles 3. Ovary 1-celled, many-ovuled, opening by 3 valves. Seeds without an appendage at the hilum.

**1. A. patula** Michx. SANDWORT. Annual, diffusely branching: leaves linear-filiform: petals white: sepals 3–5-nerved.—In barrens near Independence and at Greenwood. Locally abundant. May–June.

### 9. MOEHRINGIA L.

Cymes few-flowered. Stamens 10. Styles 3. Ovary few-ovuled. Seeds with an appendage at the hilum.

**1. M. lateriflora** (L.) Fenzl. SANDWORT. Erect, puberulent, 1° or less high: leaves oval or oblong, obtuse: cymes 1–4-flowered, soon appearing lateral.—In wet rocky woods between Lee's Summit and Little Blue Tank, fide Rev. Cameron Mann. May.

### 10. SPERGULA L.

Flowers cymose. Stamens 5–10. Styles 5 and capsule 5-valved.

**1. S. arvensis** L. SPURRY. 6′–18′ high : leaves filiform, 1′–2′ long : flowers white.—Rarely occurs along railroads at Sheffield. July–August.

### 11. ANYCHIA Michx. FORKED CHICKWEED.

Much branched annuals bearing minute flowers in the forks of the leaves. Sepals 5. Petals none. Stamens 2–5. Stigmas 2. Fruit a 1-seeded utricle.

| | |
|---|---|
| Stems puberulent. | 1. *A. dichotoma.* |
| Stems glabrous. | 2. *A. Canadensis.* |

**1. A. dichotoma** Michx. Puberulent and spreading, 3′–10′ high, with internodes 2″–4″ long : leaves lanceolate-elliptic, numerous.—In dry woods throughout the southern part.—Common locally. June–August.

**2. A. Canadensis** (L.) B.S.P. Nearly glabrous, erect, 6′–12′ high : internodes often 12″ long : leaves oval-elliptic.—Common in dry woods. June–August.

## FAMILY 45. NYMPHAEACEAE DC.

Aquatic herbs with long horizontal rootstocks and solitary axillary flowers. Sepals 3–5. Petals 5–many. Stamens 5–many. Pistils 3–many, distinct or united. Ovules 1–many.

### 1. NELUMBO Adans.

Sepals 4–5. Petals and stamens very numerous. Pistils many, each 1-ovuled and inserted separately in pits in the large fleshy obconical receptacle.

**1. N. lutea** (Willd.) Pers. CHINQUAPIN WATER LILY. Leaves centrally peltate, raised high out of the water or floating, orbicular, strongly ribbed, 1°–2° broad : flowers yellow, 4′–12′ broad.—Very abundant in ponds at Lake City ; also in Fish Lake near Sibley. July–September.

## FAMILY 46. CERATOPHYLLACEAE A. Gray.

Aquatic herbs with verticillate leaves, and sessile axillary monoecious flowers. Calyx 8–12-cleft. Sterile flowers with 8–20 stamens with large sessile anthers. Ovary superior, 1-celled, with one pendulous ovule. Fruit indehiscent, beaked with the long persistent style.

### 1. CERATOPHYLLUM L.

Characters of the family.

**1. C. demersum** L. HORNWORT. Leaves filiform, verticillate, forked : fruit smooth or tubercled, 2″–3″ long.—Common in ponds at Sibley and Sheffield. June–July.

## Family 47. **ANONACEAE** DC.

Woody plants with alternate entire, non-stipulate leaves. Sepals 3. Petals 6, in two rows, valvate in bud. Stamens numerous. Carpels numerous, fleshy in fruit.

### 1. **ASIMINA** Adans.

Small trees with nodding flowers from axils of leaves of preceding years. Pistils few, bearing numerous ovules in two rows, ripening into fleshy oblong berries. Seeds flat.

**1. A. triloba** (L.) Dunal. Papaw. 10°–30° high. Leaves obovate-cuneate: petals chocolate-colored: fruit 3′–6′ long.—Abundant in rich woods, especially in the northern part. May.

## Family 48. **RANUNCULACEAE** Juss.

Herbs or shrubs. Sepals 3–15, or more. Stamens numerous. Pistils 1–many, 1-celled, 1–many-ovuled. Sepals, petals, stamens and pistils all distinct and unconnected. Fruit either dry or berry-like.

| | |
|---|---|
| Woody plants: leaves opposite. | 7. Clematis. |
| Herbs: leaves alternate. | |
| Carpels several-ovuled. | |
| Flowers regular: petals not spurred. | |
| Sepals three, early deciduous. | 1. Hydrastis. |
| Sepals five, persistent. | 2. Isopyrum. |
| Flowers regular: petals spurred. | 3. Aquilegia. |
| Flowers irregular. | 4. Delphinium. |
| Carpels 1-ovuled. | |
| Petals absent. | |
| Flowers not in terminal panicles. | |
| Achenes woolly or hairy. | 5. Anemone. |
| Achenes smooth. | 6. Syndesmon. |
| Flowers in terminal panicles. | 12. Thalictrum. |
| Petals present. | |
| Flowers white. | 10. Batrachium. |
| Flowers yellow. | |
| Sepals spurred at base. | 8. Myosurus. |
| Sepals not spurred at base. | |
| Achenes striate. | 11. Oxygraphis. |
| Achenes not striate. | 9. Ranunculus. |

### 1. **HYDRASTIS** L.

Erect perennials from a stout yellow rootstock. Sepals three, falling off when the flower opens. Stamens and carpels numerous. Carpels 2-ovuled, in fruit forming a head of crimson berries.

**1. H. Canadensis** L. Golden Seal. About 1° high, hairy: leaves reniform, 5–9-lobed, doubly-serrate: cauline leaves two: flowers solitary, greenish-white.—Abundant locally in rich woods west of Sibley and southeast of Grain Valley. April.

### 2. **ISOPYRUM** L.

Sepals 5, white and petal-like. Stamens numerous. Follicles 2–6, several-seeded.

**1. I. biternatum** (Raf.) T. & G. False Rue-anemone. An erect perennial from tuberous thickened roots: leaves 2–3, ternately compound, the leaflets 2–3-lobed.—Abundant in moist woods. April–May.

### 3. AQUILEGIA L.

Leaves ternately decompound. Sepals 5, regular. Petals 5, produced backward into hollow spurs. Stamens numerous. Pistils 5.

**1. A. Canadensis** L. Columbine. Wild Honeysuckle. 1°–2½° high. Flowers nodding, 1′–2′ long, scarlet without, yellow within.—Abundant on rocky hillsides. May.

### 4. DELPHINIUM L. Larkspur.

Leaves palmately lobed. Flowers in terminal racemes. Sepals 5, petal-like, the posterior one prolonged into a spur. Petals 2 or 4, the two posterior ones spurred, the lower with short claws, if present.

| | |
|---|---|
| Annual: pistil solitary. | 1. *D. Ajacis.* |
| Perennial: pistils three. | |
| Flowers nearly white. | 2. *D. camporum.* |
| Flowers bright blue. | 3. *D. tricorne.* |

**1. D. Ajacis** L. Leaves dissected into narrow lobes: flowers paniculately-racemose: pods pubescent.—In waste places around Independence. Sometimes abundantly escaped. June–July.

**2. D. camporum** Greene. 1°–4° high: racemes strict, erect: follicles erect.—Rather common in barrens and rocky prairies. May–June.

**3. D. tricorne** Michx. Roots tuberous, 1°–3° high: racemes rather few-flowered: follicles widely spreading.—Moist prairies. Atherton, Little Blue Tank to Greenwood, Dodson. Locally common. May.

### 5. ANEMONE L.

Perennial herbs with dissected leaves, those of the stem opposite or verticillate. Sepals 4–20, petal-like. Achenes compressed, 1-ovuled, hairy (in ours).

| | |
|---|---|
| Stems 3′–10′ high from tubers. | 1. *A. Caroliniana.* |
| Stems 1° or more high from rootstocks. | |
| Stem leaves petioled. | |
| Head of fruit cylindric, 1′ long. | 2. *A. cylindrica.* |
| Head of fruit oblong, 9″–12″ long. | 3. *A. Virginiana.* |
| Stem leaves sessile. | 4. *A. Canadensis.* |

**1. A. Caroliniana** Walt. Root leaves 3-divided, the lobes cleft: stem leaves 3-cleft: sepals 10–20, narrow, light purple.—Rocky woods and prairies. Greenwood and north of Lee's Summit. Very local. April.

**2. A. cylindrica** A. Gray. Silky-pubescent: leaves 3–5-parted, their divisions cuneate-oblanceolate and cleft and toothed at the apex: sepals 5, greenish-white, obtuse.—In dry woods south of Raytown along Jones' Creek. June–July.

**3. A. Virginiana** L. Closely resembles the last, but leaf divisions ovate-lanceolate and sepals more acute.—Frequent throughout in rocky woods. June–July.

**4. A. Canadensis** L. 1°–2° high: basal leaves 5–7-parted, their broad divisions cleft and toothed, long-petioled: the cauline leaves similar and sessile: sepals pure white: head of fruit oblong.—Abundant in low woods along the Missouri River. May.

### 6. SYNDESMON Hoffmg.

From a cluster of tuberous thickened roots. Basal leaves 2–3, ternately compound. Flowers several, umbellate. Sepals 5–10, petal-like. Achenes terete, strongly ribbed.

**1. S. thalictroides** (L.) Hoffmg. RUE-ANEMONE. 4′–9′ high, glabrous: petals pinkish.—Abundant in dry woods south of Dodson. April–May.

### 7. CLEMATIS L.

Our species climbing vines with pinnately compound leaves. Sepals 4–5, valvate, petal-like. Stamens and pistils many. Styles persistent as plumose or naked tails to the fruit.

Flowers white. 1. *C. Virginiana.*
Flowers purplish. 2. *C. Simsii.*

**1. C. Virginiana** L. VIRGIN'S BOWER. Leaves 3-foliolate, the leaflets ovate, cut-toothed, thin: flowers small, dioecious, in leafy panicles: styles plumose.—Along streams near Courtney, Dodson and Red Bridge. Local. July.

**2. C. Simsii** Sweet. Leaflets 3–9, ovate-cordate, thick and strongly reticulated: sepals 1′ long, the tips recurved: styles plumose below.—In rocky woods throughout, but rather local. June.

### 8. MYOSURUS L.

Small annuals with linear basal leaves. Sepals 5, spurred at base. Petals 5, clawed, small. Stamens 5–20. Pistils numerous on a long slender spike-like receptacle.

**1. M. minimus** L. MOUSE-TAIL. Fruiting spike 1′ or more long.—In wet, sandy woods near Courtney and Dodson and on wet prairies near Adams, Lee's Summit and Greenwood. Common locally. April–June.

### 9. RANUNCULUS L. CROWFOOT. BUTTERCUP.

Sepals 5. Petals 5, each with a nectariferous scale at base. Stamens and carpels numerous. Achenes flattened, not ribbed, tipped by the style.

Aquatic herb. 1. *R. delphinifolius.*
Not aquatic.
  Petals not longer than the calyx.
    Plants nearly glabrous.
      Early basal leaves entire. 2. *R. abortivus.*

| | |
|---|---|
| Leaves all 3-parted. | 4. *R. sceleratus.* |
| Plants pubescent. | |
| Beak of achene strongly recurved. | 5. *R. recurvatus.* |
| Beak of achene minute. | 3. *R. micranthus.* |
| Petals twice the length of the calyx. | |
| Plants erect. | 6. *R. acris.* |
| Plants spreading. | |
| Stems pubescent or glabrous. | 7. *R. septentrionalis.* |
| Stems densely villous. | 8. *R. hispidus.* |

**1. R. delphinifolius** Torr. YELLOW WATER-CROWFOOT. Stems floating or creeping in the mud : leaves dissected into capillary segments or palmately 3-divided, the segments incised and lobed : flowers 8″–12″ broad : achenes callous-margined.—In Fish Lake and near Little Blue Tank. May–June.

**2. R. abortivus** L. 6′–20′ high, glabrous : early basal leaves cordate, crenate : the cauline leaves nearly sessile, parted and lobed : flowers 2″–3″ broad : fruiting head globose : achenes minutely pointed.—Common in moist grounds. April–May.

**3. R. micranthus** Nutt. 6′–18′ high, pubescent : roots tuberous-thickened : basal leaves 3-parted or divided. Otherwise like the last.—Frequent in woods throughout. April–May.

**4. R. sceleratus** L. 6′–24′ high, stout : basal leaves 3–5-lobed, the lobes often toothed : flowers 3″–4″ broad : fruiting head oblong-cylindric, 4″–6″ long : achenes minutely pointed.—On muddy sand-bars along the Missouri River. Sometimes frequent. May–November.

**5. R. recurvatus** Poir. 1°–2° high, hirsute : leaves all 3-divided, the lobes cut and toothed : flowers 4″–5″ broad : fruiting head globose : achenes with a long recurved beak.—Frequent in moist woods throughout. May–July.

**6. R. acris** L. 2°–3° high, erect, hairy : leaves 3-divided, their sessile divisions again cleft and parted : flowers 1′ broad : achenes short-beaked.—Rarely adventized along the railroad at Sheffield and Courtney. May–June.

**7. R. septentrionalis** Poir. Stems ascending or procumbent and widely spreading, sparingly pubescent or glabrate : leaves 3-divided, their divisions stalked, and again 3-parted, the lobes incised : flowers 1′ broad : achenes long-tipped.—Common in low woods, especially in the northern part. April–May.

**8. R. hispidus** Michx. Like the last but more erect and densely villous : achenes more slender-tipped.—On low prairies near Buckner. Rare. May–June.

### 10. BATRACHIUM S. F. Gray.

Aquatics with dissected leaves and white flowers. Like *Ranunculus* but achenes transversely wrinkled.

**1. B. divaricatum** (Schrank.) Wimm. WHITE WATER-CROWFOOT. Leaves 1′ long, much divided, rigid when drawn out of water : flowers

6″–9″ broad.—In ponds northeast of Lee's Summit and at Little Blue Tank. June–July.

### 11. OXYGRAPHIS Bunge.

Like *Ranunculus* but achenes longitudinally striate.

**1. O. Cymbalaria** (Pursh) Prantl. Glabrous, spreading by runners: leaves cordate, crenate, long-petioled: flowers 1–9, scapose, 3″–4″ broad.—On sand-bars along the Missouri River at Courtney. Also in Clay county, Mo., near Harlem. Usually rare. June–August.

### 12. THALICTRUM L. Meadow Rue.

Erect perennials with ternately decompound leaves. Flowers greenish-white, dioecious or polygamous. Sepals 4–5. Petals none. Stamens many. Carpels 4–15, longitudinally striate.

| | |
|---|---|
| Flowers dioecious, in April–May. | 1. *T. dioicum.* |
| Flowers polygamous, in June–July. | 2. *T. purpurascens.* |

**1. T. dioicum** L. 1°–2° high: leaflets thin, orbicular, 5–9-lobed.—Very abundant on the rocky bluff of the Missouri River northwest of Fairmount Park.

**2. T. purpurascens** L. 3°–6° high: leaflets thick, oblong, about 3-lobed.—Common in meadows and woodlands throughout.

## Family 49. BERBERIDACEAE T. & G.

Herbs with alternate or basal leaves. Sepals and petals present, 6–9 each, imbricated. Stamens hypogynous, opposite the petals or more numerous. Pistil one, superior, few–many-ovuled.

| | |
|---|---|
| Flowers in terminal panicles. | 1. Caulophyllum. |
| Flowers solitary. | 2. Podophyllum. |

### 1. CAULOPHYLLUM Michx.

Leaves decompound. Sepals 6, with 3–4 bractlets at base. Petals 6, small. Stamens 6. Anthers dehiscent by valves. Ovules 2. Fruit berry-like.

**1. C. thalictroides** Michx. Blue Cohosh. 1°–3° high, glaucous: leaflets 2–3-lobed: flowers greenish-purple.—Frequent in rich woods near Sibley. April.

### 2. PODOPHYLLUM L.

Sepals 6, very fugacious. Petals 6–9, white. Stamens 12–18, their anthers longitudinally dehiscent. Ovary many-ovuled. Fruit a large berry.

**1. P. peltatum** L. May Apple. 1°–2° high: sterile stems bearing a solitary centrally peltate, orbicular, 7–9-lobed leaf: the fertile bearing two similar, but one-sided leaves, with the nodding flower (2′ broad) in the fork.—Very abundant in woods. April–May.

## Family 50. MENISPERMACEAE DC.

Climbing herbs with alternate non-stipulate leaves and dioecious, panicled flowers. Sepals 4–12. Petals 6 or none. Stamens 6–24. Carpels 3–many, 1-ovuled. Fruit a drupe.

### 1. MENISPERMUM L.

Sepals 4–8 in two series. Petals 6–8. Stamens 12–24. Pistils 2–4. Drupe globular.

**1. M. Canadense** L. Moonseed. Leaves peltate near the base, cordate, 3–7-lobed or entire above: flowers greenish-white.—Common in thickets. May–June.

## Family 51. PAPAVERACEAE B. Juss.

Herbs with alternate non-stipulate leaves. Flowers regular or irregular. Sepals 2, fugacious. Petals 4–12. Stamens few–many, hypogynous. Ovary 1, 1-celled, few–many-ovuled.

| | |
|---|---|
| Flowers regular. | |
| Leaves spiny toothed. | 1. Argemone. |
| Leaves not spiny toothed. | 2. Sanguinaria. |
| Flowers irregular. | |
| Flowers white. | 3. Bikukulla. |
| Flowers yellow. | 4. Capnoides. |

### 1. ARGEMONE L. Prickly Poppy.

Petals 4–6. Stamens numerous. Stigmas 3–6, radiate. Capsule prickly, dehiscent by 3–6 valves at the apex.

| | |
|---|---|
| Flowers yellow. | 1. *A. Mexicana.* |
| Flowers white. | 2. *A. intermedia.* |

**1. A. Mexicana** L. 1°–2° high, with sessile, oblong, pinnatifid and prickly, white-spotted leaves: flowers sessile, yellow.—Waste places in Independence. Rare. July–August.

**2. A. intermedia** Sweet. Like the last but leaves not blotched: flowers peduncled, white, 1′–3′ broad.—Streets of Kansas City and Independence. Rare. July–August.

### 2. SANGUINARIA L.

Rootstock red, bearing petioled, reniform, lobed leaves and one-flowered scapes. Petals 8–12. Stamens numerous. Capsule oblong, 1-celled, 2-valved.

**1. S. Canadensis** L. Bloodroot. 4′–8′ high, glabrous and glaucous.—Frequent in rocky bluff woods along the Missouri River. April.

### 3. BIKUKULLA Adans.

Low herbs with ternately decompound and dissected leaves and irregular racemose flowers. Sepals two, minute. Petals four, in two pairs, the

outer spurred at base and spreading above, the inner narrower and clawed. Stamens six in two sets. Pods 10–20-seeded.

| | |
|---|---|
| Plants from scaly bulbs. | 1. *B. Cucullaria.* |
| Plants from corm-like tubers. | 2. *B. Canadensis.* |

**1. B. Cucullaria** (L.) Millsp. DUTCHMAN'S BREECHES. 5′–10′ high: racemes 4–10-flowered: spurs of petals divergent, sharp-pointed: inner petals minutely crested.—Common in rocky woods throughout. April.

**2. B. Canadensis** (Goldie) Millsp. INDIAN CORN. Like the last but spurs of petals short and rounded at base, and the inner petals conspicuously crested.—In rich woods along the bluffs at Courtney. Not common. April.

### 4. CAPNOIDES Adans.

Herbs with decompound leaves and yellow flowers in racemes. Sepals two, small. Petals four, the upper outer one spurred at base, the interior ones keeled. Stamens six in two sets. Pods many-seeded.

| | |
|---|---|
| Pods pendulous. | 1. *C. flavulum.* |
| Pods erect. | |
| Pods 5″–7″ long. | 2. *C. montanum.* |
| Pods 3″–6″ long. | 3. *C. micranthum.* |

**1. C. flavulum** (Raf.) Kuntze. 6′–14′ high: flowers 3″–4″ long, the spur 1″–2″ long, the outer petals wing-crested: pods torulose.—Rather common in rich woods along streams. April–May.

**2. C. montanum** (Engelm.) Britton. Like the last but flowers 6″ long: outer petals keeled but not crested: pods usually 8-seeded or more seeded, hardly torulose: racemes many-flowered, often 4′ long.—Common in rocky barrens and prairies throughout the southwestern part. April–May.

**3. C. micranthum** (Engelm.) Britton. Resembles the two preceding: outer petals barely wing-crested: flowers 3″–4″ long: pods about 5-seeded: racemes few-flowered, usually 1′ or less long.—In sandy woods near Courtney and in barrens near Dodson, Pixley's and Lee's Summit. April–May.

## FAMILY 52. CRUCIFERAE B. Juss.

Herbs with alternate leaves and racemose flowers. Sepals 4. Petals 4, cruciform. Stamens 6, tetradynamous. Pistil 1, consisting of two carpels. Stigmas usually 2-lobed. Fruit generally 2-celled and opening by valves. Cotyledons accumbent, incumbent or conduplicate. (Ripe fruit is necessary for positive determination of specimens.)

| | |
|---|---|
| Pods two-seeded. | 1. LEPIDIUM. |
| Pods more than two-seeded. | |
| Pods triangular, emarginate at apex. | 11. BURSA. |
| Pods pear-shaped. | 12. CAMELINA. |
| Pods long-orbicular. | 2. THLASPI. |
| Pods short oblong to long-linear. | |
| Flowers purplish. | 7. IODANTHUS. |
| Flowers pure white. | |

| | |
|---|---|
| Stellate pubescent. | 13. DRABA. |
| Not stellate pubescent. | |
| Stem leaves nearly verticillate. | 10. DENTARIA. |
| Stem leaves alternate. | |
| Pods oblong or orbicular. | 8. RORIPA. |
| Pods long-linear. | 9. CARDAMINE. |
| Flowers yellow or greenish-white. | |
| Pods long-beaked. | |
| Pods densely hispid. | 4. SINAPIS. |
| Pods not densely hispid. | 5. BRASSICA. |
| Pods not long-beaked. | |
| Seeds flat. | |
| Pods 4-angled. | 6. BARBAREA. |
| Pods not 4-angled. | 15. ARABIS. |
| Seeds round or oblong. | |
| Leaves entire, cordate-clasping. | 17. CONRINGIA. |
| Leaves lanceolate or linear; not pinnatifid. | 16. ERYSIMUM. |
| Leaves pinnatifid. | |
| Pubescence of forked hairs. | 14. SOPHIA. |
| Pubescence, if present, simple. | |
| Seeds in one row in each cell. | 3. SISYMBRIUM. |
| Seeds in two rows in each cell. | 8. RORIPA. |

### 1. LEPIDIUM L. PEPPER GRASS.

Pods roundish to oblong, flattened. Petals often wanting. Cotyledons incumbent or accumbent.

| | |
|---|---|
| Petals present, white. | 1. *L. Virginicum.* |
| Petals wanting. | 2. *L. apetalum.* |

**1. L. Virginicum** L. 6′–24′ high, branching: basal leaves pinnatifid, with large terminal lobe: pods minutely winged above: cotyledons accumbent.—Common in waste places. May–July.

**2. L. apetalum** Willd. Closely resembles the last, but basal leaves are equally pinnatifid: cotyledons incumbent.—Very abundant in waste places. June–August.

### 2. THLASPI L.

Flowers white. Pods oblong-orbicular, flat and winged. Cotyledons accumbent.

**1. T. arvense** L. PENNY CRESS. Annual, 6′–2° high: stem leaves oblong-lanceolate, sagittate-clasping, dentate: pods 4″–6″ broad, deeply notched at the summit.—Adventized along Spring Branch east of Independence. May–June.

### 3. SISYMBRIUM L.

Pods elongated, linear, many-seeded. Valves about 3-nerved. Seeds marginless. Cotyledons incumbent.

| | |
|---|---|
| Pods strictly erect, appressed. | 1. *S. officinale.* |
| Pods widely spreading. | 2. *S. altissimum.* |

**1. S. officinale** (L.) Scop. HEDGE MUSTARD. 1°–3° high: leaves runcinate-pinnatifid: flowers yellow: pods 5″–7″ long.—Abundant in waste places. May–October.

**2. S. altissimum** L. TALL MUSTARD. 2°–4° high: leaves deeply pinnatifid: flowers yellowish-cream color: pods 2′–4′ long, narrowly linear.—Sparingly adventized along railroads at Sheffield. May–August.

### 4. SINAPIS L.

Flowers yellowish, racemose. Pods terete, beaked, constricted between the seeds. Seeds roundish, not winged. Cotyledons conduplicate.

**1. S. alba** L. WHITE MUSTARD. 1°–3° high: leaves pinnate, with a large terminal leaflet: pods ascending: beak as long or longer than the pod.—Cultivated grounds and along railroads at Kansas City and Independence. Rare. May–June.

### 5. BRASSICA L.

Flowers yellow. Pods terete or four-sided, beaked, the beak usually 1-seeded. Seeds oblong, marginless. Cotyledons conduplicate.

| | |
|---|---|
| Leaves not clasping. | |
| Beak of fruit 1″–2″ long. | 1. *B. nigra.* |
| Beak of fruit 5″–6″ long. | 2. *B. arvensis.* |
| Upper leaves clasping. | |
| Leaves somewhat pubescent. | 3. *B. campestris.* |
| Leaves glabrous. | 4. *B. Napus.* |

**1. B. nigra** (L.) Koch. BLACK MUSTARD. 2°–6° high: leaves deeply pinnatifid, dentate: pods narrowly linear, 6″ long, smooth, on pedicels 2″–4″ long, appressed in fruit.—Abundant in waste places. June–September.

**2. B. arvensis** (L.) B.S.P. CHARLOCK. 2°–3° high, hispid: leaves pinnatifid: pods linear, knotty, 6″–8″ long, smooth, on short ascending pedicels. –Frequent along railroads, especially at Sheffield. May–September.

**3. B. campestris** L. TURNIP. 1°–3° high, glabrous: lower leaves pubescent, pinnatifid: upper leaves glabrous, auriculate, clasping and entire: pods 1′–2′ long, on long spreading pedicels, long-beaked.—Infrequent in waste places and along railroads. May–September.

**4. B. Napus** L. RAPE. Like the last, but leaves entirely glabrous.—Infrequent along railroads. April–September.

### 6. BARBAREA R. Br.

Flowers yellow. Pod long-linear, four-sided. Seeds in one row in each cell. Cotyledons accumbent.

**1. B. stricta** Andrz. WINTER CRESS. 1°–2° high: leaves lyrate-pinnatifid: pods about 1′ long, appressed on erect pedicels.—Along railroads near the foot of Burge Park Bluffs, Kansas City. Rare. May.

### 7. IODANTHUS T. & G.

Petals long-clawed, purplish. Pods long-linear, cylindric. Seeds in one row in each cell. Cotyledons accumbent.

**1. I. pinnatifidus** (Michx.) Steud. PURPLE ROCKET. 1°–3° high, glabrous: leaves oblong in outline, dentate: pods 12″–18″ long.—In rich woods throughout, but not common. May–July.

### 8. RORIPA Scop.

Flowers white or yellow. Pods from subglobose to oblong-linear. Seeds numerous, marginless. Cotyledons accumbent. The first four species are known as YELLOW WATER CRESS.

| | |
|---|---|
| Flowers yellow. | |
| Perennial. | 1. *R. sinuata.* |
| Annuals. | |
| Seeds pitted. | 2. *R. sessiliflora.* |
| Seeds minutely tuberculate. | |
| Pedicels 1″ long. | 3. *R. obtusa.* |
| Pedicels 2″–4″ long. | 4. *R. palustris.* |
| Flowers white. | |
| Creeping and spreading. | 5. *R. Nasturtium.* |
| Erect. | 6 *R. Armoracia.* |

**1. R. sinuata** (Nutt.) A. S. Hitchcock. Branches spreading and ascending, glabrous: leaves oblong, pinnately cleft: flowers 3″–4″ broad: pods 4″–6″ long.—Quite common in sandy soil along the Missouri River. April–June.

**2. R. sessiliflora** (Nutt.) A. S. Hitchcock. Erect, 6′–12′ high: leaves oblong, crenate and lobed: flowers 1″ broad, nearly sessile: pods oblong, thick —Common with the next. April–November.

**3. R. obtusa** (Nutt.) Britton. Much branched and spreading: leaves pinnatifid: flowers 1″ broad: pods oblong, 1″–5″ long.—Common on sand-bars along the Missouri River. April–November.

**4. R. palustris** (L.) Bessey. 6′–2° high, erect, glabrous: leaves oblong, pinnatifid: flowers 1″–2″ broad: pods about equalling the pedicels.—Common in wet places throughout. April–November.

**5. R. Nasturtium** (L.) Rusby. WATER CRESS. Glabrous: leaves divided into 3–9 oblong to orbicular segments: pedicels about 10″ long, widely spreading and as long as the pods.—In springs around Kansas City. Common locally. May–August.

**6. R. Armoracia** (L.) A. S. Hitchcock. HORSE RADISH. 2°–4° high, from large rootstocks: leaves oblong, crenate to pinnatifid: pedicels ascending: flowers large.—Occasionally escaped along roads. May–July.

### 9. CARDAMINE L. BITTER CRESS.

Pods long, linear, with nerveless valves and seeds in a single row in each cell. Cotyledons accumbent.

| | |
|---|---|
| Plants not from a tuberous base. | |
| Terminal leaf segment obovate to orbicular. | |
| Stems 8′ or more high, stout. | 1. *C. Pennsylvanica.* |
| Stems 2′–5′ high, delicate. | 2. *C. parviflora.* |
| Terminal leaf segment linear to linear-oblong. | 3. *C. arenicola.* |
| Plants from a tuberous base. | 4. *C. bulbosa.* |

**1. C. Pennsylvanica** Muhl. 8′–2° high, leafy: leaves pinnatifid, of 3–8 pairs of toothed oblong leaflets: flowers 2″ broad.—In bogs along the bluffs west of Sibley. Uncommon. April–May.

**2. C. parviflora** L. 2′–5′ high, very delicate and weak: leaves of 1–5 leaflets, the terminal orbicular, the lateral oblong to linear: flowers 1″ broad.—On mossy rocks in ravines west of Lee's Summit. Rare. April–May.

**3. C. arenicola** Britton. 4′–12′ high, much branched and leafy: leaves of 3–5 pairs of entire or sparingly toothed linear leaflets: flowers 1″–2″ broad.—Wet sandy prairies near Dodson and Grain Valley. Frequent. April–May.

**4. C. bulbosa** (Schreb.) B.S.P. 1° high: basal leaves orbicular, the cauline oblong to lanceolate, toothed or entire: flowers 5″–7″ broad.—In bogs near Courtney and Little Blue Tank. Rare and local. May–June.

### 10. DENTARIA L.

Plants from deep-seated scaly or toothed rootstocks, bearing about three 3-divided and subverticillate leaves below the floral raceme. Pods linear, flat, with seeds in one row in each cell. Cotyledons accumbent.

**1. D. laciniata** Muhl. PEPPER ROOT. 1° high: leaflets lanceolate, the lateral usually two-cleft, and all cut-toothed: flowers white to pinkish, 7″ broad.—Rather common in moist woods throughout. April–May.

### 11. BURSA Weber.

Flowers white. Pods compressed contrary to the partition.

**1. B. Bursa-pastoris** (L.) Britton. SHEPHERD'S PURSE. 6′–2° high, slightly pubescent: root-leaves pinnatifid, the cauline lanceolate, sagittate-clasping and sparingly dentate.—A very common weed. April–October.

### 12. CAMELINA Crantz. FALSE FLAX.

Annuals with yellowish flowers, and pear-shaped pods, pointed by the persistent style.

Pods 2″–3″ long. 1. *C. microcarpa.*
Pods 4″ long. 2. *C. sativa.*

**1. C. microcarpa** Andrz. 1°–2° high, hirsute below: leaves lanceolate, sagittate-clasping, nearly entire: pods 2″–3″ long.—Adventized along the Santa Fe Railroad east of Sheffield. Common in one locality. Also near Morris, Kansas. May–June.

**2. C. sativa** Crantz. Like the last but whole plant glabrate, pods larger and racemes shorter.—Rarely occurs at Sheffield. June.

### 13. DRABA L. WHITLOW GRASS.

Stellate-pubescent annuals with entire or toothed leaves and linear to linear-oblong nerveless pods. Seeds in two rows in each cell.

Pods 3″–9″ long, many-seeded.
Leaves entire.
Pods smooth. 1. *D. Caroliniana.*
Pods hispid. 2. *D. micrantha.*
Leaves toothed. 3. *D. cuneifolia.*
Pods 1″–2″ long, few-seeded. 4. *D. brachycarpa.*

**1. D. Caroliniana** Walt. 1′–6′ high, much branching and spreading: leaves oblong-oval, 4″–10″ long: pods linear, longer than the pedicels.—In sandy fields near Independence and Courtney. April–May.

**2. D. micrantha** Nutt. Resembles the last but is larger throughout, and the hispid pods are wider.—Common in barrens. April–May.

**3. D. cuneifolia** Nutt. Resembles No. 1, but leaves are cuneate at base, and sparingly dentate above: pods minutely hairy.—Common in a barren east of Dodson. April–May.

**4. D. brachycarpa** Nutt. 1′–4′ high: leaves ovate, entire: pods smooth, oblong.—Wet, sterile prairies, from Little Blue Tank to Greenwood. Rare and local. April.

### 14. SOPHIA Adans. Tansy Mustard.

Herbs with twice-pinnatifid leaves and forked pubescence. Pods linear, long-pedicelled, seeds in 1–2 rows in each cell. Cotyledons incumbent.

Pedicels ascending. 1. *S. intermedia.*
Pedicels horizontal. 2. *S. myriophylla.*

**1. S. intermedia** Rydb. 10′–24′ high, glabrous or short-glandular-pubescent: leaves twice pinnate: pods erect, 4″–7″ long.—Often common in dry grounds and waste places throughout. April–July.

**2. S. myriophylla** (DC.) Rydb. Resembles the last, of which it may be but a form, but has horizontal pedicels and pods, the latter 5″ or less long.—Dry grounds west of Lee's Summit and probably common. April–July.

### 15. ARABIS L. Rock Cress.

Pods linear, the valves 1-nerved. Seeds in one row in each cell in ours. Cotyledons accumbent.

Leaves pinnatifid. 1. *A. Virginica.*
Leaves merely dentate.
Stem leaves clasping. 2. *A. dentata.*
Stem leaves not clasping. 3. *A. Canadensis.*

**1. A. Virginica** (L.) Trelease. 6′–14′ high, diffusely spreading: pods ascending, about 1′ long, on short pedicels.—Very common along the railroad from Pixley's Switch to Buckner, and in wet sandy fields near Grain Valley. Probably native. April–May.

**2. A. dentata** T. & G. 1°–2° high, ascending: leaves oblong, unequally toothed: pods spreading, very slender, 10″–15″ long.—In wet woods and on wet rocks throughout, but not common.

**3. A. Canadensis** L. 1°–3° high, erect, pubescent below: leaves lanceolate-oblong: pods pendulous, scythe-shaped, 2′–4′ long.—Occasional in rocky woodlands throughout. May–June.

### 16. ERYSIMUM L.

Leaves entire to toothed. Pods long-linear, quadrangular, strongly nerved. Seeds in one row in each cell. Cotyledons incumbent.

Flowers 6″–12″ high. 1. *E. asperum.*
Flowers 2″–4″ high. 2. *E. repandum.*

**1. E. asperum** DC. WESTERN WALL FLOWER. 1°–2° high: leaves linear-lanceolate, sinuate-dentate: pods 1½′–4′ long, stout, on thick pedicels.—In waste places at Sheffield and Kansas City. Rare. May–June.

**2. E. repandum** L. 1°–2° high: leaves linear, nearly entire: pods 2′–4′ long, slender, widely spreading.—Abundantly adventized near Atherton; occasional elsewhere. Also at Argentine, Kansas. May–June.

### 17. CONRINGIA Link.

Glabrous herbs with elliptic-ovate, entire, clasping leaves and linear, quadrangular, nerved pods. Seeds in one row in each cell. Cotyledons incumbent.

**1. C. orientalis** (L.) Dumort. TREACLE MUSTARD. 1°–3° high: pods 3′–5′ long.—In waste places at Sheffield. Rare. June.

## FAMILY 53. CAPPARIDACEAE Lindl.

Herbs with compound alternate leaves and racemose, perfect flowers. Sepals and petals four each. Stamens six or more, not tetradynamous. Ovary 1-celled, with two parietal placentae.

Stamens six. 1. CLEOME.
Stamens eight or more. 2. POLANISIA.

### 1. CLEOME L.

Leaves 3–5-foliolate. Petals clawed. Pod long-stipitate, linear-oblong, many-seeded.

**1. C. serrulata** Pursh. HONEY PLANT. 2°–6° high, glabrous: leaflets oblong-lanceolate: flowers showy, pinkish.—Abundant along railroads about one mile south of the Union Depot in Kansas City. July–September.

### 2. POLANISIA Raf.

Glandular-pubescent herbs with 3-foliolate leaves. Petals clawed. Pod nearly sessile, oblong, many-seeded.

**1. P. graveolens** Raf. CLAMMY WEED. 1°–2° high: leaflets obovate: stamens slightly exceeding petals: petals yellowish-white, 2″–3″ long.—Frequently adventized along railroads at Sheffield. July–September.

## FAMILY 54. CRASSULACEAE DC.

Herbs with perfect, regular and symmetrical flowers. Calyx 4–5-cleft or parted. Petals 4–5. Stamens 4–5 or twice as many. Carpels 4–5, 1-celled, the numerous seeds arranged in two rows.

Carpels separate. 1. SEDUM.
Carpels united to the middle. 2. PENTHORUM

### 1. SEDUM L.

Succulent herbs with cymose flowers. Sepals and petals 4–5. Stamens 8–10.

**1. S. pulchellum** Michx. Widow's Cross. 2′–12′ high, ascending: leaves numerous, linear-terete, sessile and clasping: cymes 4–7, forked, bearing the numerous flowers on the upper side: petals pinkish.—Abundant throughout on limestone rocks. May–June.

### 2. PENTHORUM L.

Erect herbs with alternate leaves and cymose flowers. Sepals 5. Petals 0 or 5. Stamens 10. Pistils 5, united at base, each beaked at the summit.

**1. P. sedoides** L. Ditch Stone Crop. 1°–3° high: leaves oblong-lanceolate, serrate, short-petioled: flowers yellowish-green.—Frequent throughout along streams and in wet places. July–September.

## Family 55. SAXIFRAGACEAE Dumort.

Herbs with perfect flowers, 5-lobed or parted calyx, 4–5 petals, usually 4–5 or 8–10 stamens, and superior ovary consisting of 1–several carpels, usually fewer than the sepals. Seeds numerous with copious endosperm.

### 1. HEUCHERA L.

Herbs with long-petioled orbicular basal leaves and terminal panicles of small flowers. Calyx bell-shaped. Petals 5. small. Stamens 5. Ovary 1-celled. Styles two.

**1. H. Americana** L. Alum Root. 2°–3° high, glandular-hirsute: leaves cuneate-dentate: calyx 1½″–3″ long.—One plant in a wood several miles north of Lake City (B. F. Bush); also at Merriam Park, Kansas (Rev. Cameron Mann). May–June.

## Family 56. GROSSULARIACEAE Dumort.

Shrubs with alternate leaves and axillary flowers. Flowers perfect. Calyx adnate to ovary, its limb 4–5-cleft. Petals and stamens each 4–5, inserted on calyx throat. Ovary 1-celled with two parietal placentae. Styles two. Fruit a berry.

### 1. RIBES L.

Characters of the family.

**1. R. Missouriense** Nutt. Wild Goose-berry. Shrub 3°–8° high, thorny: leaves orbicular, 3–5-lobed, serrate above: peduncles slender, few-flowered: flowers greenish-white: stamens much exserted.—Abundant in rocky woods throughout. April–May.

## Family 57. PLATANACEAE Lindl.

Large trees with alternate palmately-lobed leaves, sheathing stipules and monoecious flowers in spherical heads. Calyx of 3–8 small sepals and corolla of 3–8 similar petals. Stamens 3–8. Ovaries 3–8, 1-celled and containing 1 pendulous ovule. Fruit hairy at base.

### 1. PLATANUS L.

Characters of the family.

**1. P. occidentalis** L. SYCAMORE. Often 130° high: bark exfoliating: leaves 4′–9′ wide, truncate at base and lobed above: fruiting heads long-peduncled.—Common along streams. May.

## FAMILY 58. ROSACEAE B. Juss.

Plants with alternate usually stipulate leaves, and irregular usually perfect flowers. Calyx usually 5-lobed, and distinct from or adnate to the ovary. Petals usually five. Stamens numerous. Carpels 1–many, distinct or united. Fruit usually 1-celled, and ovules 1–several.

| | |
|---|---|
| Woody plants. | |
| Stems prickly. | |
| Petals pinkish. | 9. ROSA. |
| Petals white. | 3. RUBUS. |
| Stems not prickly. | |
| Flowers in corymbs. | 1. OPULASTER. |
| Flowers in panicles. | 2. SPIRAEA. |
| Herbs. | |
| Ovary superior. | |
| Styles persistent on the fruit. | 7. GEUM. |
| Styles not persistent. | |
| Flowers pure white. | 4. FRAGARIA. |
| Flowers yellowish. | |
| Receptacle enlarged in fruit. | 5. DUCHESNEA. |
| Receptacle not enlarged in fruit. | 6. POTENTILLA. |
| Ovary inferior. | 8. AGRIMONIA. |

### 1. OPULASTER Medic.

Calyx 5-cleft. Petals 5, white. Stamens 20–40. Follicles 1–5, inflated, 2-valved, 2–4-seeded.

**1. O. intermedius** Rydb. NINE-BARK. 3°–10° high, branching: leaves orbicular, serrate, 3-lobed above, petioled: ovaries 2–4, finely pubescent.—Rocky bluffs of the Missouri River from Rock Creek to Courtney. Frequent. May.

### 2. SPIRAEA L.

Like the last but follicles 5–8, 2–many-seeded, not inflated and dehiscent by but one suture.

**1. S. salicifolia** L. MEADOW SWEET. 2°–3° high: leaves petioled, oblanceolate, serrate: flowers small, white, in dense terminal panicles.—In low meadows near Lake City fide Rev. Cameron Mann. Very rare. July–September.

### 3. RUBUS L.

Shrubs with prickly stems, terminal panicled flowers and alternate compound leaves. Calyx 5-parted. Petals 5. Stamens numerous. Carpels many, ripening into drupelets imbedded in the succulent receptacle.

| | |
|---|---|
| Leaflets white beneath. | 1. *R. occidentalis.* |
| Leaflets not white beneath. | |

Plants erect. 2. *R. nigrobaccus.*
Plants trailing.
Leaflets not cordate. 3. *R. procumbens.*
Leaflets cordate. 4. *R. invisus.*

**1. R. occidentalis** L. WILD RASPBERRY. 1°–4° high, glaucous, prickly, especially on the peduncles: leaflets three, very white beneath: fruit purplish-black.—Common in woods throughout.

**2. R. nigrobaccus** Bailey. WILD BLACKBERRY. 1°–8° high, prickly, very pubescent: leaflets 3-5, ovate to oblong-ovate, coarsely serrate: flower racemes leafy-bracted at base: fruit short-oblong.—Very common in thickets. The usual form is not strongly glandular-pubescent, but near Dodson occurs a noticeably glandular-pubescent form; near Sibley a glandular-pubescent form with dry oblong fruit 5″–6″ long; and near Lee's Summit a form with very villous sepals.

**3. R. procumbens** Muhl. DEWBERRY. Stems trailing, armed with scattered prickles: leaflets oblong-ovate, 7″–30″ long, 6″–20″ wide, glabrate or pubescent, narrowed to or rounded at the base: sepals obtuse to shortly leafy-tipped.—Abundant in dry woods.

**4. R. invisus** Bailey. Stems trailing, armed with scattered prickles: leaflets ovate to ovate-orbicular, thickish, 12″–36″ long, 9″–30″ wide, quite pubescent, rounded or usually cordate at base: sepals usually strongly tipped.—Low prairies, especially along Little Blue River.

### 4. FRAGARIA L.

Acaulescent herbs with 3-foliolate leaves, and corymbose flowers. Calyx 5-parted and with 5 bracts in the sinuses. Petals 5, white. Achenes numerous, in fruit scattered over the surface of the pulpy receptacle.

**1. F. Virginiana** L. WILD STRAWBERRY. Villous with spreading hairs: leaflets obovate, sharply serrate: fruit ovoid.—Common in dry soil. April.

### 5. DUCHESNEA J. E. Smith.

Differs from *Fragaria* in having leafy stems, yellow flowers and a non-pulpy fruit.

**1. D. Indica** (Andr.) Focke. INDIAN STRAWBERRY. Stems trailing, leafy, silky-pubescent: leaflets obovate, crenate-dentate: flowers small.—Escaped from cultivation in Independence. May–June.

### 6. POTENTILLA L. CINQUEFOIL.

Plants with leafy stems and yellowish flowers, resembling *Fragaria*, but the receptacle dry and not inflated in fruit.

Leaflets pinnately 3–11-foliolate.
Plants erect. 1. *P. arguta.*
Plants procumbent. 5. *P. paradoxa.*
Leaflets digitately 3–5-foliolate.
Plants erect.
Lower leaves 3-divided. 2. *P. Monspeliensis.*
Lower leaves 5-divided. 3. *P. pentandra.*

Plants diffusely spreading.
Leaflets three. 4. *P. leucocarpa.*
Leaflets five. 6. *P. Canadensis.*

**1. P. arguta** Pursh. 1°–3° high, glandular-pubescent: leaflets 7–11, ovate, serrate: flowers densely cymose, yellowish-white.—On a rocky hill in Kansas City, just north of Roanoke Place. Very local. June–July.

**2. P. Monspeliensis** L. 1°–2° high, hairy: leaflets oblong-lanceolate, serrate: flowers yellow, cymose: stamens 15–20.—Common throughout in moist or dry soil. May–July.

**3. P. pentandra** Engelm. Like the last: leaflets three, oblong-lanceolate, the two lower parted nearly to the base: stamens 5–8.—Sandy bottom along the Missouri River. May–July.

**4. P. leucocarpa** Rydb. Spreading: leaflets three, oblong, serrate: flowers loosely cymose, small: stamens about 10.—Sandy shores of the Missouri River. May–July.

**5. P. paradoxa** Nutt. Spreading: leaflets 3–11, oblong-lanceolate, crenate: flowers loosely cymose: stamens about 20.—Common on sandy shores of the Missouri River. May–October.

**6. P. Canadensis** L. Five Finger. Stems widely spreading by runners: leaflets oblong-cuneate, serrate above: peduncles axillary, 1-flowered: stamens about 20.—Rather common in dry soil throughout. May.

### 7. GEUM L.

Erect herbs with pinnate leaves and cymose flowers. Calyx 5-parted. Petals 5. Stamens and carpels numerous. Styles long, persistent on the fruit.

Head of fruit stalked in the calyx. 1. *G. vernum.*
Head of fruit sessile.
Peduncles appressed-pubescent. 2. *G. Canadense.*
Peduncles long-hirsute. 3. *G. Virginianum.*

**1. G. vernum** (Raf.) T. & G. Spring Avens. 1°–2° high, pubescent: root-leaves orbicular, or 3–5-lobed, or pinnate with 3–7 obovate leaflets: stem leaves pinnate: petals yellow: sepals reflexed: receptacles smooth.—Locally common in low woods near Sheffield and Lake City. May–June.

**2. G. Canadense** Jacq. White Avens. Resembles the last in foliage, softly pubescent: calyx reflexed: petals whitish: styles pubescent below: receptacle densely hairy.—Common in moist woods. June–August.

**3. G. Virginianum** L. Rough Avens. Closely resembles No. 2, but stouter and bristly-pubescent: receptacle nearly smooth.—Rare in low woods near Lake City. May–July.

### 8. AGRIMONIA L. Agrimony.

Erect perennials with pinnate leaves, the leaflets serrate and intermixed with smaller leaflets. Flowers yellow, in spike-like racemes. Calyx-tube obconic and indurated in fruit, bristly above, completely enclosing two achenes. Petals 5. Stamens 5–15.

| | |
|---|---|
| Stems nearly glabrous. | 1. *A. striata.* |
| Stems pubescent to hirsute. | |
| Leaflets 5–11. | 2. *A. mollis.* |
| Leaflets 11–17. | 3. *A. parviflora.* |

**1. A. striata** Michx. 1°–3° high: leaflets 5–7, bearing few scattered hairs, oblong-obovate, obtuse: flowers rather few.—Dry woods throughout. Common. July–September.

**2. A. mollis** (T. & G.) Britton. 2°–6° high, pubescent: leaflets about 7, pubescent beneath, obovate: flowers numerous.—Common in woods. July–September.

**3. A. parviflora** Soland. 2°–6° high, densely hirsute below: leaflets lanceolate to linear-lanceolate, glandular-pubescent: flowers very numerous. Rather common in moist woods and prairies. July–September.

### 9. ROSA L.

Shrubs with prickly stems and alternate pinnate leaves. Calyx urn-shaped, contracted at the mouth, becoming fleshy in the fruit, its limb 5-lobed. Petals 5, pinkish. Stamens numerous. Ovaries sessile at the bottom of the calyx, in fruit enclosed by the fleshy calyx.

| | |
|---|---|
| Styles cohering in a column. | 1. *R. setigera.* |
| Styles distinct. | |
| Leaflets not glandular beneath. | |
| Infrastipular spines absent or small. | 2. *R. Arkansana.* |
| Infrastipular spines present, conspicuous. | 3. *R. humilis.* |
| Leaflets glandular beneath. | 4. *R. rubiginosa.* |

**1. R. setigera** Michx. PRAIRIE ROSE. Somewhat climbing, 4°–8° high: stems armed with stout prickles: leaflets about three, sharply serrate: flowers 2′–3′ broad: sepals deciduous.—Common in low grounds and prairies. June.

**2. R. Arkansana** Porter. WILD ROSE. 1°–3° high: stems prickly to nearly smooth: infrastipular spines rarely present: leaflets 5–11, oblong-elliptical to obovate, cuneate or rounded at base, sharply serrate, glabrous to strongly pubescent: flowers 2′ broad, one–many: sepals persistent, spreading or erect in fruit.—Common on prairies and in dry places. June.

**3. R. humilis** Marsh. WILD ROSE Closely resembles *R. Arkansana*, but infrastipular spines present, and conspicuous: sepals deciduous in fruit.—Rocky barrens, Swope Park to Raytown. June.

**4. R. rubiginosa** L. SWEETBRIER. 4°–6° high: stems armed with stout recurved spines: leaflets 5–7, oval, often doubly serrate: flowers few: sepals deciduous. Sparingly naturalized north of Lee's Summit and near Independence. June.

### FAMILY 59. POMACEAE L.

Trees or shrubs with alternate leaves and perfect regular flowers. Sepals and petals five each. Stamens numerous. Ovary inferior, 1–5-celled, with 1–2 ovules in each cell. Fruit a fleshy pome.

| | |
|---|---|
| Flowers pink. | 1. MALUS. |
| Flowers white. | |
| Flowers appearing before leaves. | 2. AMELANCHIER. |
| Flowers appearing after leaves. | 3. CRATAEGUS. |

### 1. MALUS Mill. WILD CRAB APPLE.

Trees with showy cymose flowers. Cells of the ovary each 2-ovuled. Pome globose, hollowed at the base and apex.

| | |
|---|---|
| Leaves nearly glabrous beneath. | 1. *M. coronaria.* |
| Leaves tomentose beneath. | 2. *M. Ioensis.* |

**1. M. coronaria** (L.) Mill. A small tree with ovate, serrate leaves, which are rounded at the base: pome about 1′ in diameter.—In woods, especially in the northern part. Not common. April.

**2. M. Ioensis** (Wood) Britton. Differs from the last in having its leaves hairy beneath and narrowed at the base, and pubescent calyx and pedicels.—Often common in woods. April.

### 2. AMELANCHIER Medic.

Small trees with white racemose flowers. Styles 2–5. Cells of ovary twice as many as the styles, each 1-seeded. Pome berry-like.

**1. A. Canadensis** (L.) Medic. SERVICE BERRY. Leaves ovate-oblong, acute, cordate at base, sharply serrate, sparingly pubescent below, 2′–4′ long: racemes several-flowered, the bracts silky-pubescent and deciduous: petals linear-spatulate.—Rocky woods chiefly in the northern part. Not common. March–April.

### 3. CRATAEGUS L. RED HAW.

Small trees with terminal corymbose white flowers. Styles 1–5. Ovary 1–5-celled, containing as many bony ovules.

| | |
|---|---|
| Leaves simply serrate. | 1. *C. Crus-Galli.* |
| Leaves doubly serrate. | |
| Leaves glabrous beneath. | 2. *C. Mackenzii.* |
| Leaves pubescent beneath. | |
| Petioles 5″ or less long. | 3. *C. pertomentosa.* |
| Petioles 5″ or more long. | 4. *C. mollis.* |

**1. C. Crus-Galli** L. 5°–20° high, glabrous throughout: leaves oblong-spatulate, 12″–20″ long, obtuse, simply serrate, strongly tapering at base to petioles 3″ or less long: fruit lurid-red, 4″–5″ wide.—Common in barrens and occasional in low grounds. A form with villous fruiting cymes, twigs and petioles and lower leaf surface pubescent, which may be distinct, occurs near Sni Mill. May.

**2. C. Mackenzii** Sargent n. sp. 5°–20° high, glabrous throughout: leaves ovate-orbicular, 1′–2′ long, acute, sharply double-serrate, truncate or subcordate at base: petioles 5″–12″ long: fruit lurid-red, 5″–6″ wide.—Barrens throughout but uncommon. May.

**3. C. pertomentosa** Ashe. 5°–20° high: leaves broadly ovate, 1½′–2½′ long, 9″–18″ wide, pubescent beneath, doubly serrate, rounded or taper-

ing at base to the soon glabrous petiole, 5″ or less long : fruit red, 6″–8″ broad.—Of infrequent occurrence. May.

**4. C. mollis** (T. & G.) Scheele. 10°–40° high : leaves broadly ovate, truncate or cordate at base, 1½′–5½′ long, 1′–5′ wide : petioles persistently short-tomentose : fruit red, edible, 8″–10″ broad.—Common in woods. Probably includes several species. April–May.

## Family 60. **DRUPACEAE** DC.

Trees or shrubs with alternate petioled leaves and perfect regular flowers. Sepals and petals 5 each. Stamens numerous. Pistil solitary, superior, 1-celled, 2-ovuled. Fruit a 1-seeded, edible drupe.

| | |
|---|---|
| Flowers white. | 1. Prunus. |
| Flowers pink. | 2. Amygdalus. |

### 1. **PRUNUS** L.

Stamens 15–20. Drupe glabrous.

| | |
|---|---|
| Flowers preceding the leaves. | |
| Leaves pubescent beneath. | 1. *P. lanata.* |
| Leaves smooth beneath. | |
| Leaves ovate-lanceolate. | 2. *P. hortulana.* |
| Leaves lanceolate. | 3. *P. angustifolia.* |
| Flowers following the leaves. | 4. *P. serotina.* |

**1. P. lanata** (Sudw.) Mackenzie & Bush, n. comb. Wild Plum. 10°–20° high : twigs, pedicels and both sides of the calyx-lobes densely short appressed-pubescent even in age : leaves ovate, long-acuminate, sharply serrate, usually strongly pubescent beneath : flowers in umbel-like clusters : calyx teeth not glandular : drupe 9″–12″ in diameter.—Common in dry places. April–May. (*P. Americana lanata* Sudw.)

**2. P. hortulana** Bailey. Goose Plum. 15°–30° high : leaves ovate-lanceolate, long-acuminate, thickish, coarsely serrulate, glabrous : pedicels glabrous : calyx lobes pubescent on both sides, glandular-serrate : drupe 9″–12″ in diameter.—Frequent in bottom lands along the Missouri River. April–May. Our form is var. *Mineri* Bailey.

**3. P. angustifolia** Michx. Hog Plum. 8°–15° high : leaves lanceolate, acute, serrulate, glabrous : flowers cymose : fruit 6″–9″ in diameter.—Occasionally adventized along railroads near Leeds, Independence and Lee's Summit.

**4. P. serotina** Ehrh. Wild Cherry. 30°–90° high : leaves oval-lanceolate, acuminate, serrate with appressed teeth : flowers in spreading, glabrous racemes : drupes globose, 4″ broad.—Rather common in woods throughout. April–May. A form with pubescent racemes occurs.

### 2. **AMYGDALUS** L.

Stamens 20–30. Drupe velvety.

**1. A. Persica** L. Peach. 15°–30° high : leaves ovate-lanceolate, long-acuminate, serrulate, glabrous : flowers large, pink, clustered on

the nodes: drupes about 1½′ in diameter.—Freely escaped, especially around Kansas City. April–May.

### Family 61. MIMOSACEAE Reichenb.

Herbs with alternate decompound leaves and small regular flowers in peduncled heads. Sepals and petals 3–6 each. Stamens few to numerous. Ovary 1-celled, bearing several–many ovules.

Stems smooth. 1. Acuan.
Stems prickly. 2. Morongia.

#### 1. ACUAN Medic.

Calyx 5-toothed. Petals 5, distinct, whitish. Stamens 5, distinct. Ovary sessile. Ovules many. Pod smooth.

**1. A. Illinoensis** (Michx.) Kuntze. False Sensitive Plant. 2°–5° high: leaflets very numerous, linear-lanceolate, about 2″ long: pods oblong, curved.—Common in dry ground throughout. June–August.

#### 2. MORONGIA Britton.

Calyx 4–5-parted. Petals 5, united to the middle, pinkish. Stamens 8–12. Ovary sessile. Ovules many. Pod prickly. Leaves sensitive.

**1. M. uncinata** (Willd.) Britton. Prickly Sensitive Plant. Decumbent, 1°–4° long: leaflets elliptical, strongly veined, 2″ long. Locally common in dry woods from Swope Park to Grain Valley and southward. May–June.

### Family 62. CAESALPINACEAE Kl. & Garcke.

Plants with simple or compound leaves and regular or irregular non-papilionaceous flowers. Sepals and petals five each. Stamens 10 or fewer. Ovary 1-celled, 1–many-ovuled. Fruit a legume.

Herbaceous plants. 2. Cassia.
Trees.
  Flowers pink. 1. Cercis.
  Flowers greenish-white.
    Very thorny. 3. Gleditschia.
    Not thorny. 4. Gymnocladus.

#### 1. CERCIS L.

Leaves simple, cordate, entire. Flowers in axillary fascicles, preceding the leaves. Calyx 5-toothed. Corolla imperfectly papilionaceous, the standard enclosed by the wings in the bud and the keel longer than the wings. Stamens 10, distinct. Pods oblong, flat.

**1. C. Canadensis** L. Red Bud. A small tree. Common in rocky woods. April–May.

#### 2. CASSIA L.

Herbs with abruptly pinnate leaves and large yellow flowers. Sepals nearly distinct. Petals nearly equal, clawed. Stamens 10, unequal. Ovules many.

Leaflets more than 12″ long.
  Leaflets 4–6. 1. *C. Tora.*

Leaflets 8–18.
  Leaflets mucronate-pointed. 2. *C. Marylandica.*
  Leaflets acuminate. 3. *C. occidentalis.*
Leaflets less than 10″ long. 4. *C. Chamaecrista.*

**1. C. Tora** L. LOW SENNA. Annual, 2°–3° high : leaflets obovate, obtuse : flowers in axillary racemes : pods 6′ long, curved.—Adventized at Levasy. Rare. July–September.

**2. C. Marylandica** L. WILD SENNA. Perennial, 2°–6° high : leaflets 6–9 pairs, elliptic-oblong, glabrate : flowers in axillary racemes : pods 2′–4′ long, linear.—Local in rich woods throughout. July–August.

**3. C. occidentalis** L. COFFEE SENNA. Annual, 3°–6° high: leaflets 4–6 pairs, ovate-lanceolate, ciliate : flowers in axillary racemes: pods 4′–6′ long, linear.—Adventized at Kansas City north of Burge Park and at Sheffield. Rare. June–October.

**4. C. Chamaecrista** L. PARTRIDGE PEA. Annual, 1°–3° high: leaflets 20–30, linear-oblong: flowers showy, 2–3 together in axillary clusters : pods oblong-linear.—Very common in dry soil throughout. July–September.

### 3. GLEDITSCHIA L.

Large thorny trees with once or twice pinnate leaves, and small greenish, polygamous flowers in spikes. Sepals and petals 3–5 each. Stamens 6–10. Pods flat, coriaceous.

**1. G. triacanthos** L. HONEY LOCUST. 30°–100° high : thorns stout, branching : leaflets oblong-lanceolate, 8″–15″ long : pod linear-oblong, 1° or more long.—Abundant along water courses. May.

### 4. GYMNOCLADUS Lam.

Trees with twice pinnate leaves and whitish polygamous or dioecious flowers in racemes. Calyx tubular beneath, 5-cleft above. Petals 5, inserted on the calyx tube. Stamens 10, short, inserted with the petals. Pod oblong, flat.

**1. G. dioica** (L.) Koch. KENTUCKY COFFEE TREE. 40°–75° high : leaves 2°–3° long, the ovate leaflets 1′–2′ long : pods 6′–10′ long.—Rather common in rich woods throughout. May.

## FAMILY 63. PAPILIONACEAE L.

Plants with alternate, compound, stipulate leaves and perfect flowers. Calyx 4–5-toothed or cleft. Petals five, irregular, and flowers usually papilionaceous. Stamens usually ten. Pistil one, superior, one- or two-celled, or transversely 2-many-celled by cross partitions. Style simple. Fruit a legume.

Not herbaceous vines.
  Leaves 1-foliolate. 2. CROTALARIA.
  Leaves 3–5-foliolate.
    Stamens 10, distinct. 1. BAPTISIA.
    Stamens monadelphous or diadelphous.
      Leaflets denticulate.

| | |
|---|---|
| Flowers spicate or racemose. | |
| Pods coiled. | 3. MEDICAGO. |
| Pods straight. | 4. MELILOTUS. |
| Flowers capitate. | 5. TRIFOLIUM. |
| Leaflets entire. | |
| Peduncles 1-flowered. | 6. LOTUS. |
| Flowers in spikes, racemes or clusters. | |
| Herbage glandular-dotted. | 7. PSORALEA. |
| Herbage not glandular-dotted. | |
| Stipules not adnate to petiole. | |
| Pods of several joints. | 14. MEIBOMIA. |
| Pods one-jointed. | 15. LESPEDEZA. |
| Stipules adnate to petiole. | 5. TRIFOLIUM. |
| Leaves pinnately many-foliolate. | |
| Flowers not papilionaceous. | |
| Corolla of but one petal. | 8. AMORPHA. |
| Corolla of five petals. | |
| Stamens 9 or 10. | 9. PAROSELA. |
| Stamens 5. | 10. PETALOSTEMON. |
| Flowers papilionaceous. | |
| Trees. | 11. ROBINIA. |
| Herbs. | |
| Pods not prickly. | 12. ASTRAGALUS. |
| Pods prickly. | 13. GLYCYRRHIZA. |
| Herbaceous vines. | |
| Leaves pinnate. | |
| Tendril-bearing. | 16. VICIA. |
| Not tendril-bearing. | 18. APIOS. |
| Leaves 3-foliolate. | |
| Keel of corolla not incurved. | 17. FALCATA. |
| Keel of corolla incurved. | 19. STROPHOSTYLES. |

### 1. BAPTISIA Vent. WILD INDIGO.

Much branching herbs with 3-foliolate leaves and racemose flowers. Pod stalked in the persistent calyx, inflated.

| | |
|---|---|
| Plants glabrous. | |
| Flowers blue. | 1. *B. australis.* |
| Flowers white. | 2. *B. leucantha.* |
| Plants densely pubescent. | 3. *B. bracteata.* |

**1. B. australis** (L.) R. Br. 2°–3° high : leaflets oblanceolate : racemes erect, loosely many-flowered : pods oblong.—Sparingly adventized along the railroad from Sheffield to Courtney. May.

**2. B. leucantha** T. & G. 3°–5° high : leaflets obovate : racemes erect, very long, many-flowered : pods elliptical, on stalks twice the length of the calyx.—Prairies and glades throughout. Frequent. June–July.

**3. B. bracteata** Ell. 1°–2° high : leaflets oblanceolate : stipules and bracts conspicuous : racemes densely flowered, often drooping : flowers yellow : pods ovoid, pointed.—Common on prairies throughout the southwestern part. April–May.

### 2. CROTALARIA L.

Anthers of two forms. Pods inflated, many-seeded, the seeds loose and rattling at maturity.

**1. C. sagittalis** L. RATTLE BOX. 3′–20′ high, erect, villous : leaves oval-lanceolate : stipules united and decurrent on stem : peduncles bearing 2–4 small, yellow flowers.—Quite common in dry open soil throughout. June–August.

### 3. MEDICAGO L.

Stamens diadelphous with anthers all alike. Pods 1–several-seeded, incurved or coiled.

| | |
|---|---|
| Flowers purple. | 1. *M. sativa.* |
| Flowers yellow ; pods reticulated. | 2. *M. lupulina.* |
| Flowers yellow ; pods spiny. | 3. *M. denticulata.* |

**1. M. sativa** L. ALFALFA. Perennial, 1°–3° high, upright, smooth : leaflets oblong-obovate : flowers racemose-spicate : pods spirally twisted.—Commonly adventized along railroads. May–September.

**2. M. lupulina** L. HOP MEDIC. Annual, hairy, decumbent : leaflets obovate : flowers spiked : pods 1-seeded, curved.—Locally naturalized along railroads at Kansas City. May–September.

**3. M. denticulata** Willd. TOOTHED MEDIC. Like the last but glabrous, and the several-seeded pods prickly.—Collected as a waif at Courtney. May–September.

### 4. MELILOTUS Juss. SWEET CLOVER.

Like *Medicago* but pods ovoid and not curved or coiled, indehiscent.

| | |
|---|---|
| Flowers white. | 1. *M. alba.* |
| Flowers yellow. | 2. *M. officinalis.* |

**1. M. alba** Desv. 3°–8° high : leaflets linear-oblong : flowers small, numerous, in long racemes : standard longer than the wing.—Abundant in waste places. May–September.

**2. M. officinalis** (L.) Lam. Like the last but lower : standard and wing equal.—Locally common in waste places at Kansas City, Independence, Leeds, Sheffield and Lee's Summit. May–September.

### 5. TRIFOLIUM L. CLOVER.

Corolla withering-persistent. Stamens diadelphous. Pods small, included in the calyx, indehiscent or tardily dehiscent, 1–6-ovuled. Stipules united to the petiole. None of our species are native.

| | |
|---|---|
| Corolla reddish-purple. | |
| Heads sessile. | 1. *T. pratense.* |
| Heads stalked. | 2. *T. medium.* |
| Corolla white or rose-colored. | |
| Plant erect or ascending. | 3. *T. hybridum.* |
| Plants creeping. | 4. *T. repens.* |

**1. T. pratense** L. RED CLOVER. 6′–24′ high, ascending, pubescent : leaflets oval, entire, commonly dark-spotted near the middle : heads globose, 1′ long, sessile : flowers sessile.—Common in fields and meadows. May–September.

**2. T. medium** L. Like the last but leaflets not spotted, and flower heads peduncled.—Independence and Courtney. Uncommon. May–September.

**3. T. hybridum** L. ALSIKE CLOVER. 1°–2° high, ascending: leaflets obovate, serrate: flowers 3″–4″ long, peduncled: pedicels 1″–2″ long.—Frequently adventized in waste places. May–September.

**4. T. repens** L. WHITE CLOVER. Widely creeping: leaflets obovate to obcordate, serrate: flowers as in the last.—Very abundant in fields, copses, etc. May–September.

### 6. LOTUS L.

Herbs with reddish-yellow flowers. Pods linear, 1–several-seeded.

**1. L. Americanus** (Nutt.) Bisch. PRAIRIE TREFOIL. 6′–2° high, erect, pubescent: leaflets oblong: flowers numerous: peduncles 1-flowered, leafy-bracted: pod 1′ long. Adventized along railroads at Sheffield: also abundant along roads west of Lee's Summit. June–August.

### 7. PSORALEA L.

Leaves 3–5-foliolate. Flowers small, bluish, in racemes. Pods ovoid, short, indehiscent, 1-seeded.

| | |
|---|---|
| Leaflets three. | |
| Plants canescent. | 1. *P. tenuiflora.* |
| Plants densely silvery-pubescent. | 2. *P. argophylla.* |
| Leaflets five. | 3. *P. esculenta.* |

**1. P. tenuiflora** Pursh. Bushy, 2°–4° high: leaflets oval to oblong: racemes slender, few-many-flowered: pods ovate to ovoid, abruptly beaked.—Common in rocky barrens and prairies, especially in the southwestern part. May–July.

**2. P. argophylla** Pursh. 1°–2° high: leaflets oval-oblong: flowers 4″ long, in interrupted spikes.—Adventized along the railroad three miles south of Independence. May–July.

**3. P. esculenta** Pursh. PRAIRIE TURNIP. 12′–18′ high, whitish villous-pubescent: leaves digitately 5-foliolate; leaflets obovate: spikes dense, often 3′ long.—Adventized along railroad east of Sheffield. June.

### 8. AMORPHA L.

Shrubs with pellucid-dotted pinnate leaves and flowers in close spikes. Corolla reduced to one petal, the standard, which is wrapped around the style and stamens. Stamens monadelphous below. Pod short, 1–2-seeded.

| | |
|---|---|
| Leaflets 12″–24″ long. | 1. *A. fruticosa.* |
| Leaflets 3″–7″ long. | 2. *A. canescens.* |

**1. A. fruticosa** L. FALSE INDIGO. 5°–15° high, pubescent or glabrate: leaflets 11–25, oblong-elliptical, short-stalked: spikes 3′–6′ long: flowers violet-purple.—Frequent along streams throughout. May–June.

**2. A. canescens** Pursh. LEAD PLANT. 1°–3° high, white-canescent: leaflets 21–51: spikes numerous, 2′–7′ long: flowers blue.—Frequent on prairies and barrens throughout the southern part. June.

### 9. PAROSELA Cav.

Flowers spicate. Petals all on claws, the standard inserted at the bottom of the calyx, and the wings and keel adnate to the stamen-tube. Pods indehiscent and one-seeded.

**1. P. Dalea** (L.) Britton. Glabrous annual, 1°–2½° high: leaflets 13–31, linear-oblong, 1″–2″ long: flowers in dense spikes, pinkish-white: calyx teeth silky pubescent.—Locally abundant in sandy grounds, especially along the Missouri River. May–September.

### 10. PETALOSTEMON Michx. PRAIRIE CLOVER.

Punctate herbs with flowers in dense spikes. Petals on long claws, the heart-shaped standard inserted at the bottom of the calyx, the claws of the inner petals adnate to the filament tubes, and the five stamens alternating with them. Pods included, 1-2-seeded.

| | |
|---|---|
| Flowers white; leaflets oblong. | 1. *P. candidus.* |
| Flowers white; leaflets linear. | 2. *P. multiflorus.* |
| Flowers rose-purple. | 3. *P. purpureus.* |

**1. P. candidus** (Willd.) Michx. 1°–3° high, glabrous: leaflets 5–9, oblong, 8″–12″ long: spikes oblong: bracts longer than the calyx.—Frequent on prairies throughout the southern part. June–July.

**2. P. multiflorus** Nutt. 1°–2° high, glabrous: leaflets 3–9, linear, 3″–5″ long: spikes subglobose: bracts shorter than the calyx.—Occasionally adventized along railroads from Kansas City to Sibley. July–September.

**3. P. purpureus** (Vent.) Rydb. 1°–3° high, nearly glabrous: leaflets 3–5, linear, 3″–9″ long: spikes oblong: bracts about the length of the silky-pubescent calyx.—With No. 1, but more common. June–July.

### 11. ROBINIA L.

Trees with odd-pinnate leaves and showy racemose flowers. Stamens diadelphous. Pods linear, flat, several-seeded, 2-valved.

**1. R. Pseudacacia** L. BLACK LOCUST. 20°–50° high: leaflets 9–19, ovate-oblong: flowers white, 6″–12″ long, very fragrant: pods smooth, 2′–4′ long.—Naturalized in many places, and perhaps native south of Little Blue Tank. May–June.

### 12. ASTRAGALUS L. MILK VETCH.

Herbs with odd-pinnate leaves and spicate-racemose flowers. Keel blunt. Stamens diadelphous. Pods very various, either completely or incompletely 2-celled.

| | |
|---|---|
| Flowers greenish-yellow. | 1. *A. Carolinianus.* |
| Flowers violet-purple. | |
| Pods oblong, globose. | 2. *A. crassicarpus.* |
| Pods linear-oblong, curved. | 3. *A. distortus.* |

**1. A. Carolinianus** L. 2°–4° high, erect : leaflets 15–27, oblong : flowers numerous, in dense spikes : pods sessile, oblong, terete, glabrous, 5″–8″ long, 2-celled, dehiscent.—Occasional in open grounds throughout. July–August.

**2. A. crassicarpus** Nutt. GROUND PLUM. Stems decumbent, 1°–2° long, appressed-pubescent : leaflets 15–25, narrowly oblong : flowers in short racemes : pods fleshy, sessile, glabrous, 8″–12″ long, 2-celled, indehiscent.—Frequent in barrens throughout the southern part. April–May.

**3. A. distortus** T. & G. Stems short, ascending, glabrate : leaflets 11–25, obovate : flowers in loose spikes : pods sessile, linear-oblong, strongly curved, glabrous, 6″–12″ long, 1-celled, grooved beneath.—Frequent with the last. April–May.

## 13. GLYCYRRHIZA L.

Herbs with odd pinnate leaves and spicate racémose flowers. Stamens diadelphous. Alternate anthers smaller. Pods sessile, indehiscent, prickly.

**1. G. lepidota** Pursh. WILD LIQUORICE. 1°–3° high : herbage dotted : leaflets 11–19, oblong-lanceolate : flowers greenish-white. Occasionally adventized along railroads from Kansas City to Courtney. May–June.

## 14. MEIBOMIA Heist. STICK TIGHT.

Herbs with stipellate, 3-foliolate leaves and rather small flowers in racemes. Calyx somewhat 2-lipped. Stamens diadelphous. Loments sessile or stalked, transversely jointed, the joints indehiscent and rough pubescent.

Loments borne on stipes about the length of the pedicel.
- Panicle arising from the base of the plant. — 1. *M. nudiflora.*
- Panicle terminal. — 2. *M. grandiflora.*

Stipes of loments not exceeding calyx.
- Bracts large and conspicuous before flowering.
  - Stipules large and conspicuous.
    - Leaves not coriaceous and reticulated beneath.
      - Leaflets obtuse, mucronate. — 3. *M. canescens.*
      - Leaflets long-acuminate.
        - Leaflets pubescent. — 5. *M. longifolia.*
        - Leaflets glabrous. — 4. *M. bracteosa.*
    - Leaves coriaceous and reticulated beneath. — 7. *M. Illinoensis.*
  - Stipules small and inconspicuous.
    - Leaflets oblong-lanceolate. — 6. *M. Canadensis.*
    - Leaflets linear. — 8. *M. sessilifolia.*
- Bracts small and inconspicuous.
  - Joints of loment triangular.
    - Plants glabrous. — 9. *M. paniculata.*
    - Plants pubescent. — 10. *M. Dillenii.*
  - Joints of loment oval.
    - Plants pubescent. — 11. *M. rigida.*
    - Plants glabrous. — 12. *M. Marylandica.*

**1. M. nudiflora** (L.) Kuntze. Leaves crowded at summit of sterile stems : leaflets ovate-orbicular, 1′–3′ long : flowering stem leafless :

loments straight on the back, deeply indented below into 2–3 joints.—Dry woods near Courtney. Local. July–September.

**2. M. grandiflora** (Walt.) Kuntze. Leaves crowded at summit of stem, from which arises the naked panicle: leaflets round-ovate, 2′–6′ long: loments 1–3-jointed.—Abundant in dry woods throughout. June–August.

**3. M. canescens** (L.) Kuntze. 2°–5° high, villous-pubescent: leaflets blunt, whitish-pubescent beneath: loments 4–6-jointed, the joints unequally rhomboid.—Frequent in dry sandy grounds, especially along the Missouri River. July–September.

**4. M. bracteosa** (Michx.) Kuntze. 3°–6° high, very smooth below: leaflets 2′–6′ long, ovate-lanceolate, acuminate: loments 3–7-jointed, the joints rhomboid-oblong.—Occasional in thickets throughout, but not common. July–August.

**5. M. longifolia** (T. & G.) Vail. 2°–5° high, minutely pubescent: leaflets 2′–4′ long, ovate-lanceolate, acuminate, pubescent: loments 4–6-jointed, the joints triangular.—Rather common in rocky woods, especially in the northwestern part. July–September.

**6. M. Canadensis** (L.) Kuntze. 2°–6° high: leaflets 1½′–3′ long, oblong-lanceolate, obtuse, appressed-pubescent beneath: flowers large: loments 3–5-jointed, the joints obliquely oval.—Occasional in rich woods and prairies throughout the western part. July–September.

**7. M. Illinoensis** (A. Gray) Kuntze. 3°–5° high, rough-pubescent: leaflets 1½′–3′ long, ovate-lanceolate, obtuse, coriaceous, scabrous above and strongly reticulated beneath: loments 6″–12″ long, 3–6-jointed, the joints oval.—Frequent in dry barrens and on prairies throughout the southern part. June–July.

**8. M. sessilifolia** (Torr.) Kuntze. 2°–4° high, pubescent: leaves nearly sessile, the leaflets linear-oblong, obtuse, pubescent and usually strongly reticulated beneath: loment 1–3-jointed, the joints obliquely obovate.—Frequent in barrens, especially in the southern part. July–August.

**9. M. paniculata** (L.) Kuntze. 2°–4° high, nearly glabrous: leaflets oblong-lanceolate, smooth, blunt: loment 3–6-jointed, the joints obliquely triangular.—Abundant, especially in low woods. July–September.

Var. **pubens** (T. & G.) Vail. Leaflets appressed-pubescent beneath: loments strongly constricted above and below.—Sandy woods along Blue near Martin City.

**10. M. Dillenii** (Darl.) Kuntze. 2°–3° high, pubescent: leaflets oblong-ovate, 1′–2′ long, pubescent beneath, blunt: loment 2–4-jointed, the joints triangular.—Common in dry soil. July–September.

**11. M. rigida** (Ell.) Kuntze. 1°–3° high, rough-pubescent: leaflets oblong-ovate, scabrous above, pubescent beneath, blunt, 10″–20″ long: loment 1–3-jointed, the joints obliquely oval.—Dry hills along the Little Blue. Rare. August–September.

**12. M. Marylandica** (L.) Kuntze. 1°–3° high, nearly glabrous: leaflets ovate-orbicular, 3″–12″ long, glabrous: loment 1–3-jointed, the joints obliquely oval.—Locally common in dry woods south of Grain Valley and near Little Blue Tank and Martin City. August–September.

### 15. LESPEDEZA Michx. Bush Clover.

Herbs with non-stipellate, 3-foliolate leaves, and flowers in panicles, spikes or clusters. Calyx lobes equal. Stamens diadelphous. Pods composed of a single one-seeded joint, ovate to orbicular. Some of the flowers sessile and apetalous in Nos. 1, 2, 3 and 4. Probably contains three distinct genera.

Perennials; flowers purple.
  Flowers long-peduncled.
    Leaflets oval-oblong to linear-oblong.
      Pods about length of sepals. 1. *L. Manniana.*
      Pods twice the length of sepals. 2. *L. acuticarpa.*
    Leaflets oval or wider. 3. *L. violacea.*
  Flowers nearly sessile. 4. *L. Virginica.*
Perennials; flowers yellowish-white. 5. *L. capitata.*
Annuals. 6. *L. striata.*

**1. L. Manniana** Mackenzie & Bush, n. sp. Erect-ascending, 1°–2° high, appressed-pubescent: leaves short-petioled: leaflets oblong-elliptic to linear-oblong, 4″–18″ long, 1″–5″ wide, appressed-pubescent beneath, mucronate: peduncles numerous, 4–12-flowered: sepals very long, lanceolate-acuminate, 2½″–3″ long, strongly hairy, often exceeding the corolla and pod: pod 2½″ long.—In barrens at Swope Park and near Red Bridge. Local. August–September.

**2. L. acuticarpa** Mackenzie & Bush, n. sp. Resembles No. 1: peduncles fewer-flowered: sepals subulate, 1½″ long, appressed-hairy, half the length of the pods, the latter very acute, 3″ long.—Barrens at Swope Park and Jones' Creek.

**3. L. violacea** (L.) Pers. Bushy-branched, spreading, 6′–20′ high nearly glabrous: leaflets oval. 4″–12″ long, 2″–8″ wide, subglabrate below: flower-spikes paniculate: flowers 4″–5″ long, on pedicels 2″ long.—In rocky woods at Swope Park, Westport, etc.

Var. **prairea** Mackenzie & Bush, n. var. Leaflets 6″ or less long: flower-spikes hardly paniculate: flowers 3″ long, on pedicels 1″ long.—The common form on dry banks throughout. Possibly a distinct species.

**4. L. Virginica** (L.) Britton. 1½°–2½° high, erect, appressed-pubescent: leaflets oblong-linear, 4″–12″ long, appressed-pubescent beneath: flowers crowded in subsessile clusters: pods appressed-pubescent.—Occasional in dry woods, especially in the southern part. August–September.

**5. L. capitata** Michx. 2°–6° high, pubescent: leaflets oblong, 1″–3″ long, silvery-pubescent, glabrate above: flowers in dense globose heads: pods pubescent.—Common in dry ground. July–September.

Var. **sericea** Hook. & Arn. Leaflets sericeous above.—In similar situations as the type, and about as common.

Var. **longifolia** (DC.) T. & G. Leaflets linear-oblong, 1½′–3½′ long.—Rocky woods near Dodson. Not common.

**6. L. striata** (Thunb.) H. & A. Diffusely branching, 3′–15′ long, subpubescent: leaves nearly sessile, the leaflets oblong: stipules large: flowers 1–3 together, nearly sessile.—Found as a waif near Dodson and Sheffield. August-October.

### 16. VICIA L. Vetch.

Vines with pinnate tendril-bearing leaves and purplish flowers. Stamens diadelphous. Styles with a tuft of hairs at the summit. Pods flat, dehiscent, 2-valved, several-seeded.

Flowers in racemes.
Racemes 3–9-flowered. 1. *V. Americana.*
Racemes 1–2-flowered. 2. *V. micrantha.*
Flowers nearly sessile. 3. *V. sativa.*

**1. V. Americana** Muhl. Wild Vetch. Glabrous perennial, 1°–3° long: leaflets 10–16, elliptic-ovate: flowers 8″–9″ long.—Locally abundant on clayey banks near Pixley's, Adams and Levasy. May–August.

**2. V. micrantha** Nutt. Glabrous perennial, 1°–2° long: leaflets 4–10, linear-oblong: flowers 2″–3″ long.—Collected as a waif at Courtney. May.

**3. V. sativa** L. Common Vetch. Annual, 1°–2° high, nearly glabrous: leaflets 8–14, obovate to linear-oblong, retuse and mucronate at apex, 2″–4″ wide: flowers 6″–9″ long.—Locally adventized along railroads at Sheffield. May–July.

### 17. FALCATA Gmel. Hog Peanut.

Vines with 3-foliolate, stipellate leaves and purplish flowers in axillary racemes and also apetalous flowers from basal branches. Upper pods linear-oblong, several-seeded. Lower pods obovate, 1-seeded.

Plant glabrate or sparingly pubescent. 1. *F. comosa.*
Plant villous-pubescent. 2. *F. Pitcheri.*

**1. F. comosa** (L.) Kuntze. 1°–3° long: leaflets rhombic-ovate, 1′–3′ long, thin: bracts small, nearly glabrous: ovary glabrous with a hairy margin.—Rather common in dry woods. August–September.

**2. F. Pitcheri** (T. & G.) Kuntze. 5°–20° long: leaflets as in the last but thickish: bracts large, pubescent: ovary hairy.—Common in moist woods, especially along the Missouri River. August–September.

### 18. APIOS Moench.

Vines with pinnate, stipellate leaves and chocolate-colored flowers in dense racemes. Calyx somewhat 2-lipped. Keel incurved. Pods linear, many-seeded, rarely formed.

**1. A. tuberosa** Moench. Ground Nut. 5°–10° long from tubers: leaflets 5–7, ovate-lanceolate: flowers numerous, 4″ long.—In low grounds througout, but not common. July–August.

### 19. STROPHOSTYLES Ell. Wild Bean.

Vines with pinnately 3-foliolate, stipellate leaves, and capitate flowers at the end of long peduncles. Pods linear, bearing several oblong truncate seeds.

Leaflets ovate. 1. *S. helvola.*
Leaflets linear-oblong. 2. *S. pauciflora.*

**1. S. helvola** (L.) Britton. Spreading annual, 1°–4° long: leaflets strongly lobed, 1′–2′ long: pods 2′–3′ long: seeds 3″ long, pubescent.—Sandy bottoms, especially along the Missouri River. Not common. July–October.

Var. **Missouriensis** (S. Wats.) Britton. Climbing, often 10°–25° high: leaflets usually entire.—Common in sandy woods, especially along the Missouri River.

**2. S. pauciflora** (Benth.) S. Wats. Spreading annual, 1°–3° long: leaflets entire, 9″–30″ long: pods 1′–2′ long: seeds 1½″ long, glabrous.—Sandy bottoms near Courtney, along the Little Blue, near Lee's Summit and adventized along railroads. Uncommon. July–October.

## Family 64. GERANIACEAE J. St. Hill.

Herbs with palmately lobed stipulate leaves and perfect, regular, 5-merous flowers. Ovary 5-lobed, 5-celled.

### 1. GERANIUM L.

Stamens usually 10. Ovary cells each with two ovules. Fruit long-beaked.

Flowers 12″–18″ broad. 1. *G. maculatum.*
Flowers 4″–6″ broad. 2. *G. Carolinianum.*

**1. G. maculatum** L. Wild Geranium. Erect perennial, 1°–2° high, somewhat pubescent: leaves 3–5-parted, the segments toothed at the apex and often lobed: petals rose-purple, woolly at base.—Frequent in woods throughout. April–May.

**2. G. Carolinanum** L. Crane's Bill. Pubescent branching annual, 6′–18′ high: leaves about 5-parted, the segments lobed: petals light pink.—Common in barren soils. April–June.

## Family 65. OXALIDACEAE Lindl.

Herbs with palmately 3-foliolate, obscurely stipulate leaves and perfect regular, umbellate or cymose, 5-merous flowers. Ovules 2–many in each cell. Fruit a loculicidal capsule.

### 1. OXALIS L. Wood Sorrel. Sour Clover.

Stamens ten, monadelphous at base, alternately shorter. Styles five, separate. Leaflets usually obcordate.

Flowers violet. 1. *O. violacea.*
Flowers yellow.

| | |
|---|---|
| Pedicels deflexed or reflexed in fruit. | |
| Stipules conspicuous. | 2. *O. corniculata.* |
| Stipules inconspicuous. | 3. *O. stricta.* |
| Pedicels spreading in fruit. | 4. *O. cymosa.* |

**1. O. violacea** L. A glabrous acaulescent perennial from a scaly bulb : flowers few, umbellate.—Often common on sunny slopes. April–May.

**2. O. corniculata** L. Procumbent, appressed-pubescent, 1′–12′ long : umbels bearing 1–3 flowers, 2″–6″ long : pedicels strigillose, reflexed : capsule 5″–9″ long.—Frequent in greenhouses. January–December.

**3. O. stricta** L. 3′–7′ high, strigose, branching and spreading from near the base : umbels few-flowered : capsules 8″–15″ long.—Abundant in waste places. April–September.

**4. O. cymosa** Small. 10′–24′ high, villous, usually erect : flowers in many-flowered dichotomous cymes : capsules 3″–7″ long.—Common in waste grounds. May–September.

## Family 66. LINACEAE Dumort.

Herbs with non-stipulate leaves and perfect flowers. Sepals, petals and stamens five each. Stamens monadelphous at base. Styles 2–5. Ovary 2–5- or 4–10-celled. Fruit a capsule.

### 1. LINUM L. Flax.

Flowers paniculately racemose. Ovary 4–5-celled, or falsely 8–10-celled, 8–10-seeded.

| | |
|---|---|
| Flowers blue. | 1. *L. usitatissimum.* |
| Flowers yellow. | |
| 1°–2° high ; branching above. | 2. *L. sulcatum.* |
| 1° or less high ; branching throughout. | 3. *L. rigidum.* |

**1. L. usitatissimum** L. Annual, 1°–2° high : leaves linear-lanceolate : flowers 6″–8″ broad : capsule 3″–4″ long.—Abundantly adventized along roadsides and railways. May–September.

**2. L. sulcatum** Riddell. Annual : leaves linear-lanceolate, the upper glandular-ciliate : flowers 6″ broad : capsules 1″–1½″ long.—In dry woods and prairies, Dodson to Lee's Summit and southward. Rather rare. June–August.

**3. L. rigidum** Pursh. Annual, with rigid branches : leaves linear-lanceolate : flowers 9″–15″ broad : capsules 2″–2½″ long.—Well established locally along railroads north of Sheffield. May.

## Family 67. ZYGOPHYLLACEAE Lindl.

Herbs with opposite pinnate leaves and perfect axillary flowers. Petals and sepals five each. Stamens 5–15. Pistils 4–12. Fruit dry.

### 1. KALLSTROEMIA Scop.

Fruit not prickly, its 10–12 segments each 1-seeded. Flowers yellow.

**1. K. maxima** (L.) T. & G. Calltrop. Pubescent annual, spread-

ing, 6′–24′ long: leaflets about eight, oblong-elliptical: fruit strongly beaked.—Sparingly adventized along railroad at Courtney; also in Kansas City, Kansas.

### Family 68. **RUTACEAE** Juss.

Shrubs with compound punctate-dotted leaves, and polygamo-dioecious regular flowers. Sepals 4–5 or none. Petals 4–5. Stamens 4–5. Pistils 2–5, inserted on an elongated receptacle. Fruit a capsule.

#### 1. **XANTHOXYLUM** L.

Prickly shrubs with odd-pinnate leaves. Flowers small, greenish. Pods fleshy, 1–2-seeded.

1. **X. Americanum** Mill. Prickly Ash. 5°–15° high: leaflets 5–11, obscurely crenate, ovate: flowers in axillary cymes: calyx absent: fruit black.—Common in woods. April–May.

### Family 69. **SIMARUBACEAE** DC.

Like the last family but leaves not punctate.

#### 1. **AILANTHUS** Desf.

Trees with odd pinnate leaves and polygamous greenish flowers in compound panicles. Stamens 8–10, in staminate flowers. Pistillate flowers with a 2–5-cleft ovary and a few stamens. Fruit a 1-seeded samara.

1. **A. glandulosus** Desf. Tree of Heaven. Leaflets many, ovate-lanceolate, oblique at base: samaras 2′ long.—Beginning to escape near Independence. May–June.

### Family 70. **POLYGALACEAE** Reichenb.

Herbs with perfect irregular flowers. Sepals five, the two lateral large, the other three small. Petals three, united into a tube. Stamens about eight, monadelphous or diadelphous. Ovary 2-celled, 2-ovuled. Seeds caruncled.

#### 1. **POLYGALA** L. Milkwort.

Stamens and petals more or less cohering.

Leaves verticillate. 1. *P. verticillata.*
Leaves alternate. 2. *P. incarnata.*

1. **P. verticillata** L. Glabrous, branching annual, 4′–10′ high: leaves linear, verticillate in fours and fives: flowers greenish-white.—Rocky woods throughout, but not common. June–July.

2. **P. incarnata** L. Glabrous, slender annual, 1°–2° high: leaves small, linear-subulate: flowers pinkish: corolla tube very slender.—Dry prairies between Lee's Summit and Greenwood. Very rare. June.

### Family 71. **EUPHORBIACEAE** J. St. Hill.

Herbs with monoecious or dioecious flowers. Sepals and petals present or wanting and flowers sometimes enclosed in a calyx-like involucre.

Stamens few–many. Ovary 3-celled, with 1 or 2 pendulous ovules in each cell. Styles three. Fruit separating into three, 2-valved carpels. Juice usually milky.

| | |
|---|---|
| Staminate and pistillate flowers separate. | |
| Stellate-pubescent herbs. | 1. CROTON. |
| Stinging pubescent herbs. | 3. TRAGIA. |
| Pubescence neither stellate nor stinging. | |
| Flowers in terminal panicles. | 4. RICINUS. |
| Flowers in axils of leafy bracts. | 2. ACALYPHA. |
| Both kinds of flowers together in a cup-shaped involucre, the whole resembling a single flower. | 5. EUPHORBIA. |

### 1. CROTON L. SILVERY SPURGE.

Herbs with dioecious or monoecious flowers. Calyx in staminate flowers usually 5-parted with rudimentary petals and five or more stamens. Pistillate calyx 5–10-parted, petals usually wanting, and ovary usually 3-celled and 3-seeded. Staminate flowers in spikes, the fertile flowers below.

| | |
|---|---|
| Flower monoecious. | |
| Leaves toothed. | 1. *C. glandulosus.* |
| Leaves entire. | |
| Flowers woolly-pubescent. | 2. *C. capitatus.* |
| Flowers appressed-pubescent. | 3. *C. monanthogynus.* |
| Flowers dioecious. | 4. *C. Texensis.* |

**1. C. glandulosus** L. Glandular hairy annual, 8′–2° high : leaves oblong-ovate, bearing two glands at base : staminate flowers with four sepals, four petals, a four-rayed disk and eight stamens: fertile flowers with five sepals, and rudimentary petals.—Adventized at Sheffield and Courtney. Native in sandy soil near Argentine, Kansas. July–October.

**2. C. capitatus** Michx. Densely stellate-pubescent annual, 1°–3° high : leaves lanceolate-oblong, cordate at base : sterile flowers with five sepals, five petals and 10–14 stamens : fertile flowers with 6–8 sepals and no petals : capsules erect.—Often abundant on dry prairies, especially in the southern part. July–October.

**3. C. monanthogynus** Michx. Silvery pubescent annual, 6′–2° high : leaves ovate-oblong : sterile flowers with 3–5 sepals, petals and scale-like glands, and 3–8 stamens : fertile flowers with five sepals, no petals, and five glands : capsules on recurved peduncles.—Common in dry grounds throughout. July–October.

**4. C. Texensis** (Klotzsch.) Muell. Arg. Stellate-pubescent annual, 1°–2° high : leaves linear-oblong : both sterile and pistillate flowers with five sepals, no petals and 5 small glands : stamens ten. Found occasionally as a waif near Sheffield, Courtney and Independence. July–October.

### 2. ACALYPHA L. THREE-SEEDED MERCURY.

Herbs with monoecious flowers, the sterile in spikes, the fertile at their base, surrounded by a leafy bract. Sterile flowers composed of a 4-parted

calyx and 8–16 stamens. Fertile flowers of a 3–5-parted calyx and a 3-celled, 3-ovuled capsule.

| | |
|---|---|
| Sterile spike shorter than fruiting bract. | 1. *A. Virginica.* |
| Sterile spike surpassing fruiting bract. | 2. *A. gracilens.* |

**1. A. Virginica** L. 1°–2° high, not glandular: leaves ovate-oblong, long-petioled, serrate.—Common in rich woods throughout. August–October.

**2. A. gracilens** A. Gray. Rather smaller, often very glandular: leaves lanceolate to linear-oblong, short-petioled, sparingly toothed.—Common in dry ground. August–October.

### 3. TRAGIA L.

Herbs with monoecious spicate-racemose flowers. Staminate flowers with a 3–5-parted calyx and 2–5 stamens. Pistillate flowers with a usually 5-parted calyx. Capsule 3-seeded.

**1. T. ramosa** Torr. STINGING SPURGE. Erect spreading, 1° high leaves ovate-lanceolate, sharply serrate, cordate at base: calyx of staminate flowers 4–5-parted and stamens 4–5. Locally abundant in a barren east of Martin City. June–September.

### 4. RICINUS L.

Glabrous annuals with peltate, palmately many-cleft leaves and monoecious flowers in terminal clusters. Staminate flowers with a 3–5-parted calyx and many branching stamens. Pistillate calyx 3–5-parted, the ovary 3-celled and 3-ovuled.

**1. R. communis** L. CASTOR BEAN. 6′–15° high: leaves 3′–2° broad.—Rarely escaped along railroads at Kansas City and occasionally found around old houses near Independence in a depauperate form. July–October.

### 5. EUPHORBIA L. SPURGE.

Flowers borne in a cup-shaped, 4–5-lobed involucre with glands in the sinuses. Sterile flowers numerous, lining the inside of the involucre and composed of one stamen with a small bract at base. Fertile flower solitary, consisting of a three-lobed, at length long-stalked 3-ovuled ovary. Styles three, 2-cleft.

| | |
|---|---|
| Glands of involucre with petal-like appendages. | |
| Leaves opposite and entire. | |
| Leaves linear. | 1. *E. Nuttallii.* |
| Leaves orbicular-ovate. | 2. *E. serpens.* |
| Leaves opposite and serrulate. | |
| Plants densely hairy. | 3. *E. maculata.* |
| Plants glabrous or nearly so. | |
| Leaves 1-nerved. | 4. *E. glyptosperma.* |
| Leaves strongly 3-nerved. | 5. *E. nutans.* |
| Lower leaves alternate; upper verticillate. | |
| Bracts green. | 6. *E. corollata.* |
| Bracts white, large. | 7. *E. marginata.* |

| | |
|---|---|
| Glands of involucre without petal-like appendages. | |
| Stem-leaves opposite. | 8. *E. dentata.* |
| Stem-leaves alternate, not entire. | |
| Capsules smooth. | 9. *E. heterophylla.* |
| Capsules warty. | 10. *E. Arkansana.* |
| Stem-leaves alternate, entire. | 11. *E. Cyparissias.* |

**1. E. Nuttallii** (Engelm.) Small. Erect, 6′–20′ high, glabrous: leaves often involute and somewhat curved, truncate and mucronate at apex: involucral glands bearing large white appendages: seeds 4-angled.—Frequent in rocky barrens from Westport to Little Blue Tank and southwestward. July–September.

**2. E. serpens** H.B.K. Widely prostrate-spreading, glabrous: involucral glands bearing small white crenulate appendages: seeds 4-angled.—Common in rich soil. July–October.

**3. E. glyptosperma** Engelm. Ascending or prostrate, glabrous: leaves linear-oblong, falcate, finely serrulate: glands of the involucre with small white crenulate appendages: seeds 4-angled, sharply transversely wrinkled.—Often common on sand-bars along the Missouri River.

**4. E. maculata** L. Procumbent, puberulent or hairy: leaves ovate-oblong to linear-oblong, often blotched with red: glands of the involucre with small whitish appendages: seeds 4-angled, usually strongly transversely wrinkled.—Abundant in waste places. May–October. All specimens examined have the involucre more or less cleft on one side.

**5. E. nutans** Lag. Erect, 1°–2° high, smooth: leaves ovate-oblong, somewhat falcate, serrate: involucres in dense clusters: glands of the involucre bearing orbicular entire appendages: seeds black, four-angled and ridged.—Abundant in waste places. June–October.

**6. E. corollata** L. 1°–3° high, erect, smooth: leaves oblong, often emarginate at apex, nearly sessile: glands of the involucre bearing 5 conspicuous white petal-like appendages: seeds sparingly pitted.—Common in barrens and prairies throughout the southern part. June–September.

**7. E. marginata** Pursh. 1°–4° high, erect, hairy: leaves oval, sessile, mucronate: glands of involucre white-appendaged: seeds reticulated and tuberculate.—Occasionally adventized in waste places, especially at Dodson and Independence. July–September.

**8. E. dentata** Michx. 6′–2° high, erect, somewhat hairy: leaves ovate-lanceolate, coarsely toothed, petioled: involucral glands not appendaged: seeds tuberculate.—Common in open grounds. June–October. A form commonly adventized at Sheffield has the upper leaves linear-lanceolate and entire.

**9. E. heterophylla** L. 6′–2° high, erect, nearly glabrous: leaves linear to oblong-orbicular, sinuate-toothed, serrate or entire, often red-blotched, the upper often fiddle-shaped: involucral glands not appendaged: seeds tubercled.—Common in rocky soil throughout, especially in the southern part.

**10. E. Arkansana** Engelm. 12′ or less high, erect, glabrous: leaves oblong-spatulate, sessile, those of the inflorescence opposite and ovate: involucral glands not appendaged: seeds faintly reticulated.—Barrens near Lee's Summit and Dodson. Local. May–June.

**11. E. Cyparissias** L. Glabrous perennial, 6′–12′ high: leaves linear: bracts heart-shaped: involucral glands crescent-shaped, not appendaged: seeds smooth.—Persistent after cultivation near Wayne City. May–June.

### Family 72. CALLITRICHACEAE Lindl.

Small herbs with opposite leaves and monoecious or perfect axillary flowers with two bracts or bractless. Sepals and petals absent. Stamen one. Ovary 4-celled. Styles 2. Fruit compressed, containing four pendulous seeds.

#### 1. CALLITRICHE L. Water Starwort.

With the characters of the family.

| | |
|---|---|
| Terrestrial. | 1. *C. Austini.* |
| Aquatic. | 2. *C. heterophylla.* |

**1. C. Austini** Engelm. Tufted, 6″–30″ long: leaves spatulate, 3-nerved: bracts absent: fruit $\frac{1}{3}$″ long, deeply notched at both ends.—In moist upland woods, Little Blue Tank, Lee's Summit, Grain Valley. Locally common. June.

**2. C. heterophylla** Pursh. 2′–10′ long: leaves obovate and 3-nerved or linear: bracts present: fruit less than $\frac{1}{2}$″ long, and as broad, obovate, rounded on the face, shorter than the styles.—In ponds along the Little Blue from Little Blue Tank to Atherton. Local. May–July.

### Family 73. ANACARDIACEAE Lindl.

Shrubs or vines with milky juice, alternate leaves and polygamo-dioecious or perfect regular flowers. Sepals, petals and stamens 3–7 each. Ovary 1-celled, 1-ovuled. Styles three.

#### 1. RHUS L.

Flowers polygamous in panicles. Sepals, petals and stamens five each. Styles terminal. Fruit symmetrical.

| | |
|---|---|
| Leaves pinnately many-foliolate. | |
| Leaf rachis wing-margined. | 1. *R. copallina.* |
| Leaf rachis not wing-margined. | 2. *R. glabra.* |
| Leaves 3-foliolate. | |
| Fruit gray, glabrous. | 3. *R. radicans.* |
| Fruit reddish, hairy. | |
| Leaflets pubescent. | 4. *R. aromatica.* |
| Leaflets glabrous. | 5. *R. trilobata.* |

**1. R. copallina** L. Black Sumac. 5°–30° high: leaflets 9–21, ovate-lanceolate, entire, downy: flowers greenish in dense terminal panicles: fruit reddish, hairy.—Common in dry soil throughout. June–July.

**2. R. glabra** L. SMOOTH SUMAC. 5°–30° high : leaflets 11–31, ovate-lanceolate, serrate, glabrous, whitish beneath : flowers and fruit as in No. 1.—Abundant in dry soil throughout. June–July.

**3. R. radicans** L. POISON IVY. A climbing vine : leaflets 3, rhombic-ovate, from entire to strongly serrate, pubescent : flowers in axillary panicles.—Very abundant throughout. A vile nuisance. May–June.

**4. R. aromatica** Marsh. FRAGRANT SUMAC. 3°–10° high : leaflets three, ovate, rhomboid, pubescent, unequally crenate or crenate-dentate, 1′–2′ long : flowers in spikes developing before the leaves.—Common in rocky woods throughout. April–May.

**5. R. trilobata** Nutt. SKUNK BUSH. Resembles the last but the smaller (1′ or less long) glabrous leaflets crenately few-lobed or toothed. Adventized at Sheffield ; and one clump native in a barren five miles southeast of Grain Valley. April–May.

## FAMILY 74. CELASTRACEAE Lindl.

Shrubs or vines with simple leaves and regular perfect flowers. Sepals, petals and stamens 4–5, the stamens alternate with the petals and inserted on the conspicuous disk. Ovary 2–5-celled, with two ovules in each cell. Fruit a fleshy pod.

Leaves opposite ; shrub. 1. EUONYMUS.
Leaves alternate ; a vine. 2. CELASTRUS.

### 1. EUONYMUS L.

Flowers in axillary cymes. Capsules 3–5-lobed, the seeds enclosed in a red aril.

**1. E. atropurpureus** Jacq. BURNING BUSH. 6°–20° high : leaves ovate, acuminate, petioled, serrate : petals four, purplish.—In woods throughout, but not common. May–June.

### 2. CELASTRUS L.

Flowers greenish, in terminal racemes. Pods 3-celled, globose, orange-colored, the seeds enclosed in a red aril.

**1. C. scandens** L. BITTERSWEET. A twining vine with alternate, ovate, petioled, crenulate leaves : petals five, whitish.—Not uncommon in woods throughout, especially in the northern part. June.

## FAMILY 75. STAPHYLEACEAE DC.

Shrubs with opposite 3-foliolate, stipulate leaves, and perfect, regular flowers. Sepals, petals and stamens five each, the latter inserted on a fleshly disk. Ovary 3-lobed, with 1–many ovules in each cell.

### 1. STAPHYLEA L.

Flowers white, in drooping racemes on jointed pedicels. Fruit a large inflated, bladdery capsule.

**1. S. trifolia** L. BLADDERNUT. 4°–12° high: leaflets ovate, acuminate, pointed, finely serrate.—Common along moist rocky bluffs, especially in the northern part. May.

## FAMILY 76. ACERACEAE St. Hil.

Trees with opposite leaves and regular polygamous or dioecious flowers. Sepals five. Petals five (or absent), inserted on the margin of the disk. Stamens 3–12. Ovary 2-lobed, 2-celled, 4-ovuled. Fruit of two, winged, 1-seeded samaras.

### 1. ACER L.

With characters of the family.

| | |
|---|---|
| Leaves simple. | |
| Leaves silvery white beneath. | 1. *A. saccharinum.* |
| Leaves not silvery white beneath. | |
| Leaves smooth beneath. | 2. *A. Saccharum.* |
| Leaves minutely downy beneath. | 3. *A. nigrum.* |
| Leaves 3–7-foliolate. | 4. *A. Negundo.* |

**1. A. saccharinum** L. WHITE MAPLE. 50°–125° high: flowers appearing before the leaves, in sessile lateral clusters: petals none: ovary tomentose: leaves deeply 5-lobed, the lobes irregularly dentate.—Common along streams. March–April.

**2. A. Saccharum** Marsh. SUGAR MAPLE. 30°–100° high: flowers appearing with the leaves, drooping on long capillary hairy pedicels: petals none: leaves 3–5-lobed, the sinuses rounded and the lobes irregularly sinuate.—Bluffs from Courtney to Levasy, but uncommon. April–May. Our form is var. *barbatum* (Michx.) Trelease.

**3. A. nigrum** Michx. BLACK SUGAR MAPLE. Differs from the last in the leaf-lobes being broader and more entire, and in the leaves being downy beneath.—Abundant in the northeastern part. April–May.

**4. A. Negundo** L. BOX ELDER. 30°–60° high: flowers dioecious, appearing before the leaves, the fertile racemose: leaves 3–7-foliolate, the ovate leaflets irregularly dentate.—Common throughout, especially along bluffs. April–May.

## FAMILY 77. HIPPOCASTANACEAE T. & G.

Woody plants with opposite palmately several-foliolate leaves, and polygamous flowers in terminal panicles. Calyx 5-lobed. Petals 4–5, unequal, clawed. Stamens about 7. Ovary 3-celled, 8-ovuled. Capsule hard and leathery.

### 1. AESCULUS L.

Characters of the family.

**1. A. glabra arguta** (Buckley) Robinson. BUCKEYE. HORSE CHESTNUT. 3°–30° high: leaflets 5–9, ovate-lanceolate, serrate, pubescent or becoming glabrate: flowers yellow: stamens exserted: fruit at maturity nearly smooth.—Abundant along streams. April–May.

### Family 78. **BALSAMINACEAE** Lindl.

Herbs with alternate, petioled leaves, no stipules and irregular axillary flowers. Sepals three, the two lateral much smaller than the third which is long-spurred and petaloid. Petals three, two of them 2-lobed. Stamens five. Ovary 5-celled, many-ovuled. Fruit a capsule bursting elastically by the five spirally coiled valves.

#### 1. **IMPATIENS** L. Touch-me-not.

Characters of the family.

| | |
|---|---|
| Flowers orange-yellow, mottled. | 1. *I. biflora.* |
| Flowers light yellow. | 2. *I. aurea.* |

**1. I. biflora** Walt. 2°–6° high, glabrous: leaves ovate-elliptic, coarsely toothed: spur of sac strongly incurved, half as long as sac.—Abundant in moist woods. May–September.

**2. I. aurea** Muhl. Differs from the last in having pale yellow, sparingly mottled flowers, the sac contracted into an abruptly bent but scarcely incurved spur, one-third the length of the sac.—Abundant with the last. May–September.

### Family 79. **RHAMNACEAE** Dumort.

Woody plants with simple alternate leaves and small regular flowers. Calyx 4–5-toothed. Petals 4–5. Stamens 4–5, opposite the petals. Ovary 2–5-celled, bearing one ovule in each cell. Stamens and petals inserted on the edge of a fleshy disk.

| | |
|---|---|
| Flowers greenish, axillary. | 1. Rhamnus. |
| Flowers white, in terminal corymbs. | 2. Ceanothus. |

#### 1. **RHAMNUS** L.

Shrubs with axillary cymose flowers. Petals 4–5, short-clawed, wrapped around the stamens. Ovary free. Drupe berry-like.

**1. R. lanceolata** Pursh. Buckthorn. 4°–12° high: leaves ovate-lanceolate, serrulate, glabrous: flowers subdioecious: fruit 2-seeded.—Common in barrens, especially in the southern part. April–May.

#### 2. **CEANOTHUS** L. New Jersey Tea.

Small shrubs. Petals clawed, hooded. Lower part of calyx and disk cohering with the ovary. Fruit dry, 3-lobed, 3-seeded.

| | |
|---|---|
| Flowers April–May. | 1. *C. ovatus pubescens.* |
| Flowers June–July. | 2. *C. Americanus.* |

**1. C. ovatus pubescens** T. & G. 1°–5° high: whole plant densely pubescent: leaves oval-lanceolate, glandular-serrate: flowering peduncles short.—Frequent in barrens, especially in the southern part.

**2. C. Americanus** L. Resembles the last but leaves ovate or ovate-oblong and flowering peduncles long.—Prairies and barrens throughout, but less frequent than the last.

## Family 80. **VITACEAE** Lindl.

Vines with alternate and small regular greenish panicled flowers. Calyx minutely 4–5-toothed or entire. Petals 4–5. Stamens 4–5, opposite the petals. Ovary 1, 2–6-celled, with 1–2 ovules in each cavity. Fruit generally a 2-celled, 4-seeded berry.

| | |
|---|---|
| Leaves simple. | |
| Petals united into a cap. | 1. Vitis. |
| Petals separate, spreading. | 2. Ampelopsis. |
| Leaves compound. | 3. Parthenocissus. |

### 1. **VITIS** L.

Tendril-bearing vines with polygamo-dioecious flowers and dentate leaves. Petals falling off without separating. Hypogynous disk present. Berries edible.

| | |
|---|---|
| Leaves with a bluish tinge beneath. | 1. *V. aestivalis.* |
| Leaves white woolly beneath. | 2. *V. cinerea.* |
| Leaves green on both sides. | |
| Leaves strongly lobed. | 3. *V. vulpina.* |
| Leaves rarely lobed. | 4. *V. cordifolia.* |

**1. V. aestivalis** Michx. Summer Grape. Branches terete, glabrous: leaves crenately toothed and more or less lobed, rusty-pubescent beneath: berries 6″ wide with a bloom.—Thickets near Independence, Courtney and Lake City. May–June.

**2. V. cinerea** Engelm. Downy Grape. Branches angled, floccose-pubescent: leaves more or less angled, crenately toothed: berries 4″ wide, without bloom.—Common in thickets. June.

**3. V. vulpina** L. June Grape. Branches terete, glabrous: leaves sharply serrate, nearly glabrous: berries 4″ wide, in dense clusters, with a bloom. Common in thickets. May–June.

**4. V. cordifolia** Michx. Frost Grape. Branches terete, rather pubescent: leaves crenate-serrate, glabrous or pubescent beneath: berries 3″ wide, in long clusters. Not uncommon in woods. June.

### 2. **AMPELOPSIS** Michx.

Differs from *Vitis* chiefly in having spreading separate petals and inedible berries.

**1. A. cordata** Michx. False Grape. Leaves heart-shaped, coarsely serrate, sometimes slightly lobed, nearly glabrous: flowers in small panicles: berries green and blue mottled.—Abundant in low woods. June.

### 3. **PARTHENOCISSUS** Planch.

Vines with disk-bearing tendrils and digitately compound leaves. Petals spreading. Hypogynous disk wanting. Berries inedible.

**1. P. quinquefolia** (L.) Planch. Virginia Creeper. Leaflets oval to oblong-lanceolate, toothed, sessile or stalked, glabrous to downy: panicle large: berries blue.—Common in woods throughout. July.

## Family 81. **TILIACEAE** Juss.

Trees with alternate leaves and perfect flowers. Sepals and petals five each, the latter imbricated in the bud. Stamens numerous. Ovary 1, 2–10-celled. Fruit 1–10-celled.

### 1. **TILIA** L.

Flowers yellowish, in axillary cymes, the base of the peduncle united to a membranous bract. Petals bearing small scales at the base. Stamens 5-delphous. Ovary 5-celled. Fruit indehiscent, 1–2-seeded.

**1. T. Americana** L. Basswood. 50°–125° high: leaves obliquely ovate, cordate at base, sharply serrate: flowers very fragrant.—Common throughout along streams. June–July.

## Family 82. **MALVACEAE** Neck.

Herbs or shrubs with alternate leaves and usually perfect flowers. Sepals and petals five each, the latter convolute in the bud. Stamens numerous, monadelphous, forming a column around the pistil and united with the claws of the petals. Ovary several-celled, with 1–several ovules in each cell.

| | |
|---|---|
| Seeds solitary in each cell. | |
| Flowers pinkish. | |
| Carpels beakless. | 1. Malva. |
| Carpels beaked. | 2. Callirrhoë. |
| Flowers yellow. | |
| Involucral bractlets present. | 3. Malvastrum. |
| Involucral bracts none. | 4. Sida. |
| Seeds many in each cell. | |
| Involucels none. | 5. Abutilon. |
| Involucels present. | 6. Hibiscus. |

### 1. **MALVA** L.

Involucel bracts three. Column of stamens anther-bearing at the summit. Styles stigmatic on the inner side.

| | |
|---|---|
| Stems tall, erect. | |
| Leaf margins not wrinkled or crisped | 1. *M. sylvestris.* |
| Leaf margins crisped and wrinkled. | 2. *M. verticillata crispa.* |
| Stems procumbent. | 3. *M. rotundifolia.* |

**1. M. sylvestris** L. High Mallow. 2°–4° high: leaves cordate, orbicular, sharply lobed and serrate: flowers axillary, 12″–15″ broad, pinkish.—Rarely escaped in waste places. Independence, Sibley. July–September.

**2. M. verticillata crispa** L. Crisped Mallow. Like the last but leaves crisped and flowers but 4″–7″ broad.—Waste places. Independence. Rare. July–September.

**3. M. rotundifolia** L. Cheeses. Leaves orbicular-cordate, crenate, often lobed, long-petioled: petals pinkish-white: flowers 4″–7″ broad.—In waste places throughout but not common. May–October.

### 2. CALLIRRHOË Nutt. Poppy Mallow.

Involucel bracts three or none. Styles and stigmas as in *Malva*.

Involucel bracts none. 1. *C. alceoides.*
Involucel bracts three. 2. *C. involucrata.*

**1. C. alceoides** (Michx.) Gray. 1° high, erect: leaves triangular-heart-shaped, 5–7-lobed, the divisions linear to ovate, toothed: flowers light pink, 1′ broad.—Occurs rarely as a waif at Sheffield. May–June.

**2. C. involucrata** (T. & G.) Gray. 1°–3° long, spreading: leaves orbicular, palmately lobed, the lobes cleft and toothed: flowers reddish, purple, 1′–2′ broad.—Rarely occurs as a waif near Sheffield and Greenwood. June–August.

### 3. MALVASTRUM A. Gray.

Stamen column anther-bearing at summit. Stigmas capitate. Seeds ascending.

**1. M. angustum** A. Gray. Yellow Mallow. Annual, 6′–20′ high, appressed-pubescent: leaves oblong-lanceolate, dentate: flowers axillary: bractlets setaceous: petals small: sepals enlarging in fruit.—Often common in barrens, especially in the southern part. June–September.

### 4. SIDA L.

Differs from *Malvastrum* chiefly in having pendulous seeds.

**1. S. spinosa** L. Prickly Mallow. Annual, 1°–2° high: leaves ovate-lanceolate, serrate, bearing 2 or 3 small tubercles at the base of the slender petiole: flowers axillary, 2″–4″ broad.—Abundant in open grounds. July–October.

### 5. ABUTILON L.

Involucels none. Stamen column anther-bearing at apex. Stigmas capitate.

**1. A. Avicennae** Gaertn. Velvet Leaf. Annual, 2°–6° high, velvety-pubescent: leaves cordate, acuminate, long-petioled, crenulate: flowers yellow, axillary, 6″ broad.—A common weed in waste places. June–October.

### 6. HIBISCUS L.

Involucel bractlets numerous. Stamen column anther-bearing for much of its length. Stigmas capitate. Ovary 5-celled.

Glabrous perennial. 1. *H. militaris.*
Hairy annual. 2. *H. Trionum.*

**1. H. militaris** Cav. Rose Mallow. Bushy, 3°–8° high: leaves triangular in outline, strongly 3-parted, toothed: flowers pinkish, 3′–5′ broad.—Locally common in swamps near Sibley, Atherton and Leeds. June–September.

**2. H. Trionum** L. Flower-of-an-Hour. 1°–2° high: leaves 3–7-lobed, the lobes toothed and cleft: flowers yellow with a black center:

fruiting calyx inflated.—Adventized in fields and along roads throughout. Rather common. June–September.

### Family 83. **HYPERICACEAE** Lindl.

Herbs with opposite, entire, punctate or black-dotted leaves, and cymose-paniculate regular and perfect flowers. Sepals and petals 5 each. Stamens few–many, often in sets. Ovary 1-celled with 3–5 parietal placentae or 3–5-celled. Ovules numerous. Leaves usually sessile.

#### 1. **HYPERICUM** L. St. John's Wort.

Characters of the family as given above.

| | |
|---|---|
| Flowers 1′–2′ broad. | 1. *H. Ascyron.* |
| Flowers 3″–12″ broad. | |
| Stems 4-angled. | 2. *H. sphaerocarpum.* |
| Stems terete. | |
| Leaves clasping at base. | 3. *H. maculatum.* |
| Leaves tapering to base. | 4. *H. corymbosum.* |
| Flowers 1″–2″ broad. | 5. *H. mutilum.* |

**1. H. Ascyron** L. 3°–6° high : leaves ovate-oblong : pods 5-celled : styles 5 : stamens numerous, 5-adelphous.—In woods near Independence, Courtney and Atherton. Very local. July–August.

**2. H. sphaerocarpum** Michx. 1°–2½° high : leaves oblong-linear : pods 1-celled : styles three : stamens numerous, not in groups.—On rocky banks and in low grounds throughout. Rather common. July–August.

**3. H. maculatum** Walt. 1°–2° high : leaves oblong-elliptic, strongly black-dotted, as are the petals and sepals : pods 3-celled : styles 3 : stamens numerous. 3- or 5-adelphous.—Not uncommon on low prairies in the southern part. July–September.

**4. H. corymbosum** Muhl. Like the last but leaves strongly tapering at base and less black-dotted : sepals hardly dotted.—Frequent in woods, especially in the northern part. July–September.

**5. H. mutilum** L. 6′–24′ high : leaves ovate-oblong : pods 1-celled : styles 3 : stamens 5–12. Locally common in low grounds. Adams, Courtney, Buckner. July–September.

### Family 84. **ELATINACEAE** Lindl.

Herbs with opposite stipulate leaves and axillary regular and perfect flowers. Sepals, petals and stamens 2–5 each. Ovary 2–5-celled and styles 2–5. Ovules numerous. Seeds striate.

| | |
|---|---|
| Parts of the flowers in twos and fours. | 1. Elatine. |
| Parts of the flower in fives. | 2. Bergia. |

#### 1. **ELATINE** L.

Small glabrous marsh herbs.

**1. E. Americana** (Pursh) Arn. Waterwort. 6″–18″ long : leaves obovate, entire, 1″–3″ long : parts of the flowers in twos : seeds more

than 20-striate.—In a ditch near the railroad depot at Atherton. June–July.

### 2. BERGIA L.

Erect pubescent herbs.

**1. B. Texana** (Hook.) Seub. 4′–12′ high : leaves 6″–8″ long, spatulate, serrate : petals white, scarious, persistent —Twice collected on sandbars along the Missouri River near Courtney. July–October.

## Family 85. CISTACEAE Lindl.

Herbs with opposite or alternate leaves and regular flowers. Sepals and petals 3 or 5 each. Stamens few–many. Ovary solitary, 1–several-celled. Ovules stalked. Two outer sepals smaller than the three inner or wanting.

| | |
|---|---|
| Petals five, fugacious. | 1. Helianthemum. |
| Petals three, persistent. | 2. Lechea. |

### 1. HELIANTHEMUM Pers.

Early flowers petaliferous, the later apetalous. Stamens 3–10. Capsule 1-celled, few-seeded.

**1. H. majus** (L.) B.S.P. Frostweed. 1°–2° high, hoary-canescent : leaves oblong-lanceolate : petaliferous flowers 5–12, their capsules 2″ in diameter : apetalous flowers numerous, their capsules 1″ in diameter.—Very local in dry soil near Dodson, Raytown, Greenwood and Grain Valley. May–June.

### 2. LECHEA L. Pinweed.

Petals small and inconspicuous. Stamens 3–12. Stigmas prominent, three. Pods partly 3-celled, 6-seeded. Sterile leafy basal shoots are developed late in the season.

| | |
|---|---|
| Leaves oval-oblong. | 1. *L. villosa.* |
| Leaves linear. | 2. *L. tenuifolia.* |

**1. L. villosa** Ell. Tufted, erect, 10′–18′ high, villous : leaves ovate to oblong-oval.—Three miles south of Sni Mills in sandy woods. Rare. June–October.

**2. L. tenuifolia** Michx. Tufted and spreading, 4′–8′ high, appressed-pubescent : leaves all linear : sepals 1-nerved.—Locally frequent in sandy soil four miles southeast of Grain Valley, and three miles south of Sni Mills. June–October.

## Family 86. VIOLACEAE DC.

Herbs with stipulate, usually alternate or basal, leaves, and perfect more or less irregular flowers. Sepals, petals and stamens five each. Ovary 1-celled with three parietal placentae.

| | |
|---|---|
| Sepals auricled at base. | 1. Viola. |
| Sepals not auricled at base. | 2. Cubelium. |

## 1. VIOLA L.

Early flowers petaliferous and showy, the lower petal spurred at base. Two lower stamens spurred. Later flowers cleistogamous and very fertile.

| | |
|---|---|
| Plants caulescent. | |
| Flowers yellow. | 1. *V. scabriuscula.* |
| Flowers bluish. | 2. *V. Rafinesquii.* |
| Plants acaulescent ; flowers purple. | |
| Leaves lobed or parted. | |
| Petioles glabrate. | 3. *V. pedatifida.* |
| Petioles strongly pubescent. | 4. *V. Bernardi.* |
| Leaves merely crenate or dentate. | |
| Stem and leaves strongly pubescent. | 5 *V. sororia.* |
| Stems and leaves sparingly pubescent. | 6. *V. cuspidata.* |
| Stem and leaves glabrate. | |
| Leaves triangular-ovate. | 7. *V. Missouriensis.* |
| Leaves reniform-cordate. | 8. *V. pratincola.* |

**1. V. scabriuscula** (T. & G.) Schwein. YELLOW VIOLET. Stems 3′–12′ high, clustered, erect or ascending, glabrate to pubescent: leaves orbicular-ovate, acute, crenate-dentate, the basal present at flowering time: stipules ovate-lanceolate : capsules glabrous.—Common in woods throughout. April–May.

**2. V. Rafinesquii** Greene. WILD PANSY. Annuals, 2′–10′ high, glabrous : leaves lanceolate to cordate, crenate-dentate: stipules foliaceous, lyrate-pinnatifid.—Along roads and in dry woods throughout. Not uncommon. April–May.

**3. V. pedatifida** Don. PRAIRIE VIOLET. 2′–10′ high, glabrous : leaves palmately parted into 5–7 linear segments, the segments obtuse and more or less lobed. Often common in dry oak woods and on prairies throughout the southern part. April–May.

**4. V. Bernardi** Greene. BERNARD'S VIOLET. 2′–10′ high, pubescent : leaves palmately incised or cleft into 5–9 oblong or ovate-oblong segments, the segments usually somewhat serrate and lobed, pubescent beneath and ciliate.—Rather common on prairies and in dry oak woods throughout the southern part. April–May.

**5. V. sororia** Willd. HAIRY VIOLET. 3′–10′ high, villous : leaves orbicular to reniform, acute or obtuse : cleistogamous flowers on short spreading peduncles.—Not uncommon in dry grounds. April–May.

**6. V. cuspidata** Greene. WOOD VIOLET. 2′–6′ high at flowering time : leaves and petioles more or less pubescent, but not glabrous : leaves cordate-reniform : sepals ciliate : petals usually dark blue : cleistogamous flowers on spreading peduncles.—Our most common species, in woods. April–May.

**7. V. Missouriensis** Greene. MISSOURI VIOLET. 2′–5′ high at flowering time, perfectly smooth : leaves twice as long as wide, triangular-ovate : sepals little if at all ciliate : petals usually bluish-white : peduncles of cleistogamous flowers spreading to erect, 4′ or less long.—Sandy soil along streams. Frequent. April–May.

8. **V. pratincola** Swamp Violet. Often 8′–10′ high at flowering time, glabrous: leaves as wide as long: sepals glabrous: petals bright blue: peduncles of cleistogamous flowers spreading.—Wet prairies throughout especially in the southern part. Locally common. April–May.

### 2. CUBELIUM Raf.

Caulescent leafy herbs with axillary greenish flowers borne on short recurved pedicels. Lower petal slightly spurred at base. Stamens syngenesious.

1. **C. concolor** (Forst.) Raf. Green Violet. 1°–2° high, pubescent: leaves oblong-lanceolate, tapering at both ends, petioled, nearly entire.—Occasionally in rich woods throughout. April–May.

## Family 87. LOASACEAE Reichenb.

Herbs with alternate, non-stipulate leaves and cymose regular and perfect flowers. Calyx-tube adnate to the ovary, its limb 4–5-lobed. Petals 4–5, inserted with the numerous stamens on the calyx throat. Ovary 1-celled, with 2–3 parietal placentae.

### 1. MENTZELIA L.

Characters of the family.

1. **M. oligosperma** Nutt. Stick Leaf. 1°–3° high: leaves ovate to oblong, short-petioled, coarsely dentate, very sticky, rough-pubescent: flowers yellow, 10″ broad, diurnal: stamens 20–30.—On limestone banks. Dodson, Adams, Tarsney, Lee's Summit. Local. June–August.

## Family 88. CACTACEAE Lindl.

Plants with very much thickened and spiny stems. Leaves absent or small and inconspicuous. Flowers sessile, solitary, large and showy. Sepals, petals and stamens numerous. Ovary inferior, 1-celled, with numerous ovules. Fruit a berry.

### 1. OPUNTIA Mill.

Stems branching, jointed. Leaves awl-shaped, deciduous, bearing bristles and spines in their axils. Flowers yellow, opening in sunshine.

1. **O. humifusa** Raf. Prickly Pear. Prostrate spreading: joints obovate, 3′–5′ long, 2′–3′ wide: spines white, 6″–18″ long, 1–4 together: bristles reddish-brown: fruit not spiny.—Rather common in rocky places and barrens throughout the southern part. June.

## Family 89. LYTHRACEAE Lindl.

Herbs with opposite (except in *Lythrum*) non-stipulate leaves and axillary flowers. Calyx gamosepalous, often bearing accessory teeth. Petals and stamens inserted on the calyx. Ovary superior, 1–4-celled, many-ovuled. Style one. Stigmas capitate or 2-lobed.

| | |
|---|---|
| Flowers regular. | |
| Stamens four. | |
| Petals none. | 1. DIDIPLIS. |
| Petals present. | |
| Leaves auriculate or clasping. | 2. AMMANNIA. |
| Leaves tapering at base. | 3. ROTALA. |
| Stamens six to twelve. | 4. LYTHRUM. |
| Flowers irregular. | 5. PARSONSIA. |

### 1. DIDIPLIS Raf.

Aquatics with linear leaves. Calyx hemispheric, 4-lobed, not appendaged. Capsule globose, indehiscent, 2-celled.

**1. D. diandra** (Nutt.) Wood. WATER PURSLANE. 2′–10′ long: flowers small.—In ponds at Lake City and Sibley. Common at times. July–October.

### 2. AMMANNIA L.

Flowers in axillary cymes. Calyx globular, 4-angled, 4-toothed, often with accessory teeth. Capsule globular, 2–4-celled, irregularly dehiscent.

| | |
|---|---|
| Cymes sessile. | 1. *A. coccinea.* |
| Cymes plainly peduncled. | 2. *A. auriculata.* |

**1. A. coccinea** Rottb. 4′–20′ high: leaves linear-oblong: flowers 1–5 together: calyx with four accessory teeth: petals purplish: styles elongated, slender: pods oblong-orbicular, usually shorter than the calyx, 2½″–3″ high.—Common on muddy banks throughout.

**2. A. auriculata** Willd. Resembles the last but usually more slender and branching: calyx usually without accessory teeth: capsules nearly orbicular, exceeding the calyx, 2″ high.—In similar situations as the last, and about as common.

### 3. ROTALA L.

Differs from *Ammannia* in having a septicidal capsule, the valves minutely densely striate.

**1. R. ramosior** (L.) Koehne. Ascending, 1′–15′ high: leaves spatulate or linear-oblong: flowers bi-bracteolate, usually solitary in the axils.—On muddy banks throughout. Not uncommon. June–September.

### 4. LYTHRUM L.

Calyx tube cylindric, 8–12-striate, with 4–7 teeth and as many appendages. Petals 4–7, obovate. Capsules 2-celled.

**1. L. alatum** Pursh. LOOSESTRIFE. Perennial, 1°–3° high, glabrous: leaves ovate-lanceolate with a rounded base, acute, alternate or opposite: flowers pinkish-purple, conspicuous.—Common in low grounds. June–September.

### 5. PARSONSIA P. Br.

Calyx 12-ribbed, gibbous at the base, oblique at the mouth, 12-toothed. Petals 6, unequal. Stamens 11 or 12, unequal. Capsule 1-celled, few-seeded, dehiscent.

**1. P. petiolata** (L.) Rusby. TAR WEED. A viscid-pubescent annual, 6′–18′ high: leaves ovate-lanceolate, petioled, entire: petals purple.—Often very abundant on dry hills. July–September.

## FAMILY 90. ONAGRACEAE Dumort.

Herbs with regular perfect flowers, the parts in twos, fours or more. Calyx tube adnate to and sometimes prolonged beyond the ovary. Stamens and petals (when present) inserted on the summit of the calyx tube. Ovary 1–4-celled. Stigma capitate or four-lobed. Ovules numerous.

| | |
|---|---|
| Parts of the flowers in fours or more. | |
| Seeds not long silky-tufted. | |
| Calyx tube divided to summit of ovary. | |
| Stamens 4. | 1. LUDWIGIA. |
| Stamens 8–12. | 2. JUSSIAEA. |
| Calyx tube prolonged beyond the ovary. | |
| Flowers yellow. | |
| Stigmas 4-lobed. | 4. OENOTHERA. |
| Stigma discoid. | 6. MERIOLIX. |
| Flowers reddish to white. | |
| Ovary 4-celled. | 5. HARTMANNIA. |
| Ovary 1-celled. | 7. GAURA. |
| Seeds long silky-tufted. | 3. EPILOBIUM. |
| Parts of the flower in twos. | 8. CIRCAEA. |

### 1. LUDWIGIA L.

Herbs with axillary flowers and entire leaves (in ours). Parts of the flowers in fours.

| | |
|---|---|
| Leaves opposite. | 1. *L. palustris.* |
| Leaves alternate. | |
| Petals none or minute. | 2. *L. polycarpa.* |
| Petals large and conspicuous. | 3. *L. alternifolia.* |

**1. L. palustris** (L.) Ell. MARSH PURSLANE. Creeping or floating: leaves ovate, petioled: petals minute or none: flowers nearly sessile: capsule 4-sided.—Ponds and low grounds in the vicinity of Lake City. Infrequent. July–September.

**2. L. polycarpa** Short & Peter. 1°–2½° high: leaves linear-lanceolate, those of the runners spatulate: flowers sessile: capsule top-shaped, bracted at base.—Low grounds near Lake City and Sibley. Local. July–September.

**3. L. alternifolia** L. 1°–3° high: leaves lanceolate: flowers short-peduncled: capsules cubical, wing-angled.—Frequent in moist places throughout. June–September.

### 2. JUSSIAEA L.

Calyx tube elongated. Capsule long-linear.

**1. J. diffusa** Forskl. Creeping: leaves oval-oblong, entire, petioled: petals yellow, five: sepals five: capsules long-peduncled, linear, terete.

On mud flats along the Missouri River, especially near Courtney. August–October.

### 3. EPILOBIUM L. Willow Herb.

Calyx tube somewhat prolonged beyond the ovary. Parts of the flowers in fours. Capsules linear. Flowers in upper axils.

| | |
|---|---|
| Leaves linear. | 1. *E. lineare.* |
| Leaves lanceolate. | 2. *E. coloratum.* |

**1. E. lineare** Muhl. 1°–2° high, canescent: leaves entire, short-petioled.—In a bog two miles west of Sibley. Uncommon. July–October.

**2. E. coloratum** Muhl. 1°–3° high, hoary-pubescent: leaves sharply serrulate, short-petioled: seeds beakless, the coma with a slight reddish tinge.—In low grounds near Leeds, Grain Valley, Courtney and Sibley. Locally common. August-October.

### 4. OENOTHERA L. Yellow Evening Primrose.

Flowers nocturnal. Flower parts in fours. Stamens equal in length. Capsules elongated-cylindric. Seeds horizontal or ascending. Flowers spicate, or axillary in No. 1.

| | |
|---|---|
| Stems decumbent and spreading. | 1. *O. laciniata.* |
| Stems tall and erect. | |
| Petals acute-pointed. | 2. *O. rhombipetala.* |
| Petals emarginate. | |
| Capsules little pubescent. | 3. *O. biennis.* |
| Capsule strongly pubescent. | 4. *O. strigosa.* |

**1. O. laciniata** Hill. 1° or less high, appressed-pubescent: leaves sinuate-toothed or pinnatifid: flowers 3″–12″ broad: capsules linear, hairy.—Rather common in sandy soil in the Missouri River bottoms. May–July.

Var. **grandis** Britton. Flowers 24″–30″ broad.—Occasionally adventized near Sheffield and Leeds. May–July.

**2. O. rhombipetala** Nutt. 2°–4° high, appressed-pubescent: leaves linear-lanceolate, somewhat denticulate: flowers 1½′ broad, in long leafy spikes.—Sandy bottoms from Sheffield to Courtney. Infrequent. June–September.

**3. O. biennis** L. 2°–5° high, pubescent: leaves lanceolate to oblong-lanceolate, repand-denticulate: flowers 1½′ broad: capsules 1¼′ or less long, appressed-pubescent.—Common in dry soil throughout. Very variables. July–September.

**4. O. strigosa** (Rydb.) Mackenzie & Bush, n. comb. Strongly resembles the last, but stem strigose and capsules copiously pubescent.—Not uncommon throughout, especially in the southern part. (*O. biennis strigosa* Rydb.)

### 5. HARTMANNIA Spach.

Flowers diurnal. Parts in fours. Stamens unequal. Stigma 4-cleft. Capsules club-shaped, 4-ribbed and 4-winged.

**1. H. speciosa** (Nutt.) Small. WHITE EVENING PRIMROSE. 6′-24′ high, puberulent: leaves lanceolate, sinuate-denticulate: flowers 1′–3′ broad, rose-colored to white, showy.—Abundant in barrens throughout the southern part. May–June.

### 6. MERIOLIX Raf.

Flowers axillary, the parts in fours. Stamens equal. Calyx tubes short. Capsules linear-cylindric.

**1. M. serrulata** (Nutt.) Walp. YELLOW EVENING PRIMROSE. 8′–15′ high, canescent: leaves linear-lanceolate, denticulate: flowers 6″–18″ broad.—Rarely adventized near Sheffield. May–June.

### 7. GAURA L.

Flowers spicate-racemose. Parts of the flower in fours. Petals clawed. Filaments 8, each with a scale at base. Fruit indehiscent, ribbed, 1-celled, 1–4-seeded.

Plants 3°–5° high.
Stems long-hirsute. 1. *G. parviflora.*
Stems appressed-pubescent. 2. *G. biennis.*
Plants 1°–2° high. 3. *G. coccinea.*

**1. G. parviflora** Dougl. Stems 3°–5° high, long-pubescent: leaves ovate-lanceolate, repand-denticulate: flowers 2″ broad: fruit 4-angled, glabrous.—Rather common in dry soil, especially around Kansas City. May–August.

**2. G. biennis** L. 3°–5° high, appressed-pubescent: leaves oblong-lanceolate, denticulate: flowers 4″–5″ broad, light pink: fruit 4-ribbed, pubescent.—Not uncommon in dry soil throughout. July–September.

**3. G. coccinea** Pursh. 1°–2° high, canescent: leaves lanceolate-oblong, repand-denticulate: flowers 4″–5″ broad, reddish-pink: fruit 4-sided above, canescent.—Rarely adventized near Sheffield and Atherton. May–July.

### 8. CIRCAEA L.

Perennial with racemose whitish flowers, and opposite long-petioled leaves. Fruit 1–2-celled, 1–2-seeded, densely bristly with hooked hairs.

**1. C. Lutetiana** L. ENCHANTER'S NIGHTSHADE. 1°–2° high: leaves ovate, toothed: flowers $1\frac{1}{2}$″ broad. Abundant in rich woods throughout. June-August.

## FAMILY 91. HALORAGIDACEAE Kl. & Garcke.

Aquatic herbs with small sessile axillary flowers. Calyx tube coherent with the ovary. Petals 0–4. Stamens 1–8. Ovary 1–4-celled, each cell containing a single ovule.

### 1. MYRIOPHYLLUM L.

Flowers monoecious or polygamous, the parts in fours. Leaves whorled, the submersed pinnately divided, the emersed variously cut.

**1. M. pinnatum** (Walt.) B.S.P. Water Milfoil. Emersed leaves linear, serrate: fruit 2-ridged and scabrous.—Ponds at Lake City and near Sibley. Common at times. June–September.

## Family 92. ARALIACEAE Vent.

Plants with usually polygamous flowers. Calyx lobes and petals five. Stamens five, alternate with the petals. Ovary inferior, 1–several-celled, as many styles, and one ovule in each cell.

### 1. PANAX L.

Herbs from aromatic roots. Leaves verticillate, digitately compound. Flowers in a terminal umbel. Fruit a reddish berry.

**1. P. quinquefolium** L. Ginseng. 1° high: leaflets five, obovate, stalked, acuminate, serrate: fruit usually two-seeded.—Rocky woods along the Missouri bluffs from Kansas City to Atherton. Local and uncommon. June–July.

## Family 93. UMBELLIFERAE B. Juss.

Herbs with usually compound leaves and umbellate flowers. Calyx teeth five or obsolete. Petals and stamens five each, inserted on the disk crowning the summit of the inferior 2-celled, 2-ovuled ovary. Styles two. Fruit consisting of two carpels, each marked with five main and often with four additional ribs, often with oil tubes between the ribs, or the ribs winged.

Leaves linear, spiny. — 6. Eryngium.
Leaves digitately 3–7-foliolate; fruit bristly. — 7. Sanicula.
Leaves 3-foliolate; fruit smooth. — 16. Deringa.
Leaves pinnately compound or decompound.
  Flowers yellow.
    Plants acaulescent. — 4. Lomatium.
    Plants caulescent; leaflets capillary. — 8. Foeniculum.
    Plants caulescent; leaflets ovate, not toothed. — 9. Taenidia.
    Plants caulescent; leaflets not capillary, toothed.
      Fruit strongly flattened.
        Fruit with filiform ribs. — 2. Pastinaca.
        Lateral ribs of fruit corky-thickened. — 3. Polytaenia.
      Fruit not strongly flattened.
        All the fruits pedicelled. — 5. Thaspium.
        Central fruit of each umbellet sessile. — 14. Zizia.
  Flowers white.
    Leaf divisions capillary.
      Fruit tuberculate. — 10. Apiastrum.
      Fruit not tuberculate. — 17. Ptilimnium.
    Leaf divisions not capillary.
      Fruit covered with barbed prickles. — 1. Daucus.
      Fruit not covered with barbed prickles.
        Fruit linear to linear-oblong.
          Fruit glabrous. — 11. Chaerophyllum.
          Fruit appressed-bristly. — 12. Washingtonia.
        Fruit ovoid, oval or oblong.
          Stem-leaves simply pinnate. — 13. Sium.
          Stem-leaves decompound. — 15. Cicuta.

### 1. DAUCUS L.

Involucre and involucels present. Umbels concave in fruit. Fruit slightly flattened dorsally.

**1. D. Carota** L. WILD CARROT. Bristly biennial, 1°–3½° high: leaves decompound, the ultimate divisions cleft and sharp-pointed.—Waste places, Kansas City, Independence and Dodson. Not common. June–August.

### 2. PASTINACA L.

Involucre and involucels absent. Fruit oval, flattened dorsally, the lateral ribs winged.

**1. P. sativa** L. WILD PARSNIP 2°–5° high: leaf segments sessile, ovate, the ultimate divisions cut-serrate.—Abundant throughout in waste places. June-September.

### 3. POLYTAENIA DC.

Involucre none. Involucels small. Fruit oval, much flattened dorsally, the lateral ribs strongly corky-winged.

**1. P. Nuttallii** DC. PRAIRIE PARSLEY. 1°–4° high: leaf segments sessile, ovate, pinnatifid or parted, the divisions serrate or entire: fruit 3″ long.—Frequent in barrens throughout the southwestern part. May–June.

### 4. LOMATIUM Raf.

Perennial. Involucre none. Involucels present. Fruit oval or oblong, much flattened dorsally, the later ribs winged.

**1. L. daucifolium** (Nutt.) C. & R. FENNEL-LEAVED PARSLEY. 1° or less high, more or less tomentose: leaf divisions capillary: involucels gamophyllous: fruit glabrous.—Common in barrens from Westport to Adams, Grain Valley and southward. April–May.

### 5. THASPIUM Nutt.

Perennial herbs. Involucre none. Involucels small. Fruit oblong, barely flattened, the ribs strongly winged.

| | |
|---|---|
| Glabrous throughout. | 1. *T. aureum.* |
| Strongly puberulent at the joints. | 2. *T. barbinode.* |

**1. T. aureum** Nutt. GOLDEN ALEXANDERS. 1°–2½° high: stem leaves ternate, the leaflets ovate-lanceolate, serrate.—Prairies north of Lee's Summit. Very local. May–July.

**2. T. barbinode** (Michx.) Nutt. MEADOW PARSNIP. 1½°–3½° high: leaves bipinnate, the leaflets ovate to lanceolate, incised-serrate to cleft: flowers light yellow.—Locally common in rocky woods along the Blue at Martin City. May–July.

### 6. ERYNGIUM L.

Flowers in dense bracted heads. Calyx teeth sharp-tipped. Fruit ovoid to obovoid, flattened laterally, but not ribbed, tuberculate-scaly. This genus probably represents a distinct family.

**1. E. aquaticum** L. BUTTON SNAKEROOT. Glabrous perennial, 1°–6° high : leaves long-linear, parallel-veined, bristly margined : flowers white : heads 6″–9″ broad, the bracts pungently pointed.—Not uncommon throughout on prairies. July–September.

### 7. SANICULA L. Sanicle.

Involucres foliaceous. Capitate umbellets subtended by small involucels. Fruit subglobose, somewhat flattened laterally and covered with long hooked bristles.

Styles longer than the bristles. 1. *S. gregaria.*
Styles shorter than the bristles. 2. *S. Canadensis.*

**1. S. gregaria** Bicknell. Perennial, 8′–2° high : stems weak : some staminate flowers in separate heads : flowers yellow : leaflets obovate-cuneate, incised-serrate.—Not uncommon throughout in rich moist woods. May–July.

**2. S. Canadensis** L. Biennial, 6′–2° high : staminate flowers never in separate heads : flowers whitish-yellow : leaflets 3–5, resembling those of the last.—Abundant throughout in woods. May–July.

### 8. FOENICULUM Adans.

Involucre and involucels none. Fruit nearly terete, linear-oblong, prominently ribbed, but not winged.

**1. F. vulgare** Gaertn. FENNEL. Glabrous perennial, 2′–3° high : leaves decompound.—Rarely escaped from gardens in Kansas City and Independence. May–July.

### 9. TAENIDIA Drude.

Involucre and involucels none. Fruit oval, glabrous, laterally compressed, strongly 5-ribbed.

**1. T. integerrima** (L.) Drude. YELLOW PIMPERNEL. 1°–3° high, glabrous. Abundant throughout on rocky hillsides. May–June.

### 10. APIASTRUM Nutt.

Involucre none. Involucels small or none. Fruit ovate, tuberculate, laterally flattened, not ribbed.

**1. A. patens** (Nutt.) C. & R. 3′–18′ high, much-branched, slender and glabrous : leaves much dissected.—In sandy soil and in barrens throughout. Often common. May–June.

### 11. CHAEROPHYLLUM L. CHEVRIL.

Involucre none. Involucels present. Fruit linear-oblong, 5-angled, flattened dorsally. Umbels 2–6-rayed.

Prostrate spreading. 1. *C. procumbens.*
Strictly erect. 2. *C. Texensis.*

1. **C. procumbens** (L.) Crantze. 1°–2° long, somewhat hairy : ultimate leaf segments obtuse : rays 2–5-flowered : fruit somewhat beaked.—Low woods throughout, but not common. April–May.

2. **C. Texensis** C. & R. 1°–2° high : ultimate leaf segments acutish : rays 10–15-flowered : fruit not beaked.—Barrens north and west of Lee's Summit. Very abundant locally. May–June. This identification is corroborated by Professor Rose.

### 12. WASHINGTONIA Raf. Sweet Cicely.

Involucre and involucels of a few bracts or wanting. Fruit linear, bristly along the ribs, attenuate at the base. Primary and secondary rays of umbel few.

| | |
|---|---|
| Villous-pubescent. | 1. *W. Claytoni.* |
| Slightly pubescent or glabrate. | 2. *W. longistylis.* |

1. **W. Claytoni** (Michx.) Britton. 1°–3° high : leaves ternately decompound : involucre and involucels present : style less than ½″ long.—In rich woods. Kansas City to Sibley, Lake City and Dodson. Uncommon. May–June.

2. **W. longistylis** (Torr.) Britton. Like the last but more glabrate and style 1″ long.—In rich woods in the northeastern part, but uncommon. May–June.

### 13. SIUM L.

Umbels many-rayed. Fruit ovate, glabrous, strongly ribbed. Involucre and involucels prominent.

1. **S. cicutaefolium** Gmel. Water Hemlock. 3°–6° high, glabrous : leaves pinnate, the leaflets 3–17, linear-lanceolate, serrate.—Common in swamps near Lake City and Sibley. July–September.

### 14. ZIZIA Koch. Meadow Parsley.

Involucre none. Involucels small. Umbels many-rayed. Fruit ovoid, glabrous, somewhat compressed, not winged.

| | |
|---|---|
| Basal leaves ternately compound. | 1. *Z. aurea.* |
| Basal leaves cordate, not divided. | 2. *Z. cordata.* |

1. **Z. aurea** (L.) Koch. 1°–3° high : leaves ternately divided, the segments ovate-lanceolate, serrate.—Common throughout in woods and meadows. May–June.

2. **Z. cordata** (Walt.) DC. Resembles the last, but basal leaves ovate, deeply cordate, crenate : stem leaves ternate or quinate.—Frequent in sandy soil near Grain Valley. May–June.

### 15. CICUTA L.

Involucres usually none. Involucels of numerous bracts. Umbels many-rayed. Fruit ovate to oblong, corky ribbed, glabrous.

1. **C. maculata** L. Water Hemlock. 2°–6° high : leaves decompound, the leaflets lanceolate and serrate.—Abundant in wet places. June-October.

### 16. DERINGA Adans.

Involucre none. Involucels usually present. Fruit oblong, glabrous, laterally compressed. Umbels irregularly few-rayed.

**1. D. Canadensis** (L.) Kuntze. HONEWORT. 1°–3° high: leaves 3-foliolate: leaflets ovate, sharply serrate, the lateral usually 2-parted and the terminal 3-parted.—Common in woods. May–July.

### 17. PTILIMNIUM Raf.

Involucre and involucels prominent. Fruit ovate, glabrous, strongly corky-winged. Umbels many-rayed.

**1. P. Nuttallii** (DC.) Britton. MOCK BISHOP WEED. 1°–3° high, slender: involucral bracts entire, or sparingly pinnatifid: fruit 1″–2″ long. —Rare and local in wet, sandy soil near Dodson, at the mouth of Sugar Creek, near Courtney and near Sheffield. June–August.

## FAMILY 94. CORNACEAE Link.

Shrubs or trees with flowers in heads or cymes. Calyx lobes and petals 4–5 each, the latter inserted with the stamens at the base of an epigynous disk. Ovary inferior, 1–2-celled, the cells each containing a solitary pendulous ovule. Style one. Fruit a 1–2-seeded drupe.

### 1. CORNUS L. DOGWOOD.

Ours are shrubs with opposite entire petioled leaves and white cymose flowers. Petals and stamens four each.

| | |
|---|---|
| Branchlets appressed-pubescent. | |
| Leaves almost glabrous above. | 1. *C. Amomum.* |
| Leaves strongly rough-pubescent above. | 2. *C. asperifolia.* |
| Branchlets glabrous. | 3. *C. candidissima.* |

**1. C. Amomum** Mill. 5°–15° high: leaves ovate-lanceolate, more or less pubescent below, acuminate: fruit light blue.—Common especially along streams. May–June.

**2. C. asperifolia** Michx. 5°–15° high: leaves oblong-ovate, pubescent beneath, acuminate: fruit white.—Our most common species throughout. May–June.

**3. C. candidissima** Marsh. 5°–15° high: leaves ovate-lanceolate, acuminate, pale and glabrous beneath: fruit white.—Along streams near Tarsney and Atherton. Local. May–June.

## FAMILY 95. MONOTROPACEAE Lindl.

Saprophytes with scaly, bracted stems and regular perfect flowers. Calyx 2–6-parted. Corolla of 4–6 petals or 4–6-lobed. Stamens 6–12. Ovary superior, 1–6-celled, 4–6-lobed. Stigma rayed.

### 1. MONOTROPA L.

Flowers solitary Calyx of 2 sepals. Petals separate above. Ovary 5-celled.

**1. M. uniflora** L. Ghost Plant. Indian Pipe. Stems 4′–10′ high, clustered, waxy-white: flowers 6″–10″ long, nodding: capsules erect.—In rich woods. Kansas City, Independence, Atherton, Dodson and Sibley. Rare and local. August–September.

## Family 96. PRIMULACEAE Vent.

Herbs with perfect regular flowers. Calyx 5-parted and corolla 5-cleft. Stamens 5, opposite the corolla lobes. Ovary superior, 1-celled, with the ovules borne on a free central placenta. Styles and stigma one. Parts of the flower occasionally more or less than five.

| | |
|---|---|
| Stem leaves (bracts) verticillate. | 1. Androsace. |
| Stem leaves opposite. | |
| Flowers yellow. | |
| Flowers axillary. | |
| Staminodia none. | 2. Lysimachia. |
| Staminodia five. | 3. Steironema. |
| Flowers in dense heads. | 4. Naumburgia. |
| Flowers scarlet, blue or white. | 5. Anagallis. |
| Stem leaves alternate. | 6. Centunculus. |
| Leaves all basal. | 7. Dodecatheon. |

### 1. ANDROSACE L.

Low annuals with tufted basal leaves and umbellate flowers subtended by bracts similar to the leaves. Corolla white, salver-form, shorter than the calyx.

**1. A. occidentalis** Pursh. 1′–5′ high: leaves oblong-spatulate, entire: corolla less than 1″ long.—Common on dry hills and barrens, especially in the southern part. March–April.

### 2. LYSIMACHIA L.

Perennial, glandular-punctate herbs. Corolla rotate, its lobes convolute and entire. Ovules few.

**1. L. Nummularia** L. Moneywort. Creeping, 1°–2° long, glabrous: leaves ovate-orbicular, short-petioled, entire.—Escaped around gardens in Independence. May–September.

### 3. STEIRONEMA Raf. Yellow Loosestrife.

Perennial herbs. Corolla rotate, its lobes erose-denticulate, each embracing its stamen. Staminodia five, alternate with the stamens. Ovules few to many.

| | |
|---|---|
| Leaves ovate. | 1. *S. ciliatum*. |
| Leaves lanceolate. | 2. *S. lanceolatum*. |

**1. S. ciliatum** (L.) Raf. 1°–4° high, glabrous: leaves ovate, entire, rounded at base: petioles ciliate, 6″–12″ long: capsule not exceeding the calyx.—In wet grounds throughout. Often common. June–August.

**2. S. lanceolatum** (Walt.) A. Gray. Resembles the last, but the leaves lanceolate and tapering into the short (1″–6″ long) petioles.—In low meadows throughout, especially in the northeastern part. July–September.

### 4. NAUMBURGIA Moench.

A perennial herb with flowers in dense axillary peduncled heads. Corolla lobes linear, punctate-dotted, with a small tooth in each sinus. Ovules few.

**1. N. thyrsiflora** (L.) Duby. TUFTED LOOSESTRIFE. 1°–2° high: leaves oblong-lanceolate, sessile, entire, strongly black dotted: flowers 2″–3″ long.—In a bog two miles west of Sibley. Rare and local. May–June.

### 5. ANAGALLIS L.

Diffuse herbs with peduncled axillary flowers. Corolla rotate. Capsule circumscissile, many-seeded.

**1. A. arvensis** L. POOR MAN'S WEATHER GLASS. 4′–12′ high, glabrous: leaves ovate, entire, sessile, black-dotted: flowers red.—Abundantly naturalized in fields near Courtney and Independence. May–August.

### 6. CENTUNCULUS L.

Annuals with axillary flowers. Corolla white, shorter than the calyx, its lobes spreading. Capsule circumscissile, many-seeded.

**1. C. minimus** L. CHAFFWEED. 1′–5′ high: leaves oblong, entire, tapering to the base, sessile: flowers nearly sessile.—Abundant in sandy fields southeast of Grain Valley and near Martin City. June–July.

### 7. DODECATHEON L.

Flowers handsome in involucrate umbels terminating the scape, nodding. Calyx and corolla lobes reflexed at flowering time. Filaments monadelphous at base, approximate into a cone, exserted. Capsule oblong, erect, dehiscent by valves.

**1. D. Meadia** L. SHOOTING STAR. Leaves oblanceolate, entire, petioled: scape 1°–2° high: flowers rose-colored, 9″–15″ long.—On the prairie along the railroad a half mile north of Greenwood. A few clumps. First discovered about 1865 by Prof. Broadhead; rediscovered in 1899. May.

## FAMILY 97. EBENACEAE Vent.

Woody plants with alternate entire leaves and regular polygamous flowers. Calyx and corolla each 3–7-lobed. Stamens 2–4 times as many as the corolla lobes. Ovary superior, 3–12-celled, each cell containing 1–3 suspended ovules. Styles 2–8. Fruit a berry. Seeds bony.

### 1. DIOSPYROS L.

Flowers of two kinds, the sterile in cymes, the fertile solitary in the axils. Calyx and corolla 4–6 lobed. Fruit a large 4–8-seeded berry. Pistillate flowers with imperfect stamens.

**1. D. Virginiana** L. PERSIMMON. 15°–40° high: leaves ovate-oblong, petioled, strongly pubescent when young, as are the branchlets: corolla yellowish-brown.—Frequent throughout in dry soil. June–July

FAMILY 98. **OLEACEAE** Lindl.

Woody plants with opposite leaves. Calyx 2–4-parted or none. Corolla 2–4 parted or none. Stamens 2–4. Ovary superior, 2-celled, with two ovules in each cell.

### 1. FRAXINUS L.

Trees with odd pinnate leaves and polygamous or dioecious, racemose-fasciculate flowers. Stamens two. Petals wanting. Fruit a flat-winged 1–2-seeded samara.

| | |
|---|---|
| Stalks of lateral leaflets 3″–4″ long. | 1. *F. Americana.* |
| Stalks of lateral leaflets 1″–2″ long. | |
| Branchlets glabrous. | 2. *F. lanceolata.* |
| Branchlets downy. | 3. *F. Pennsylvanica.* |

**1. F. Americana** L. WHITE ASH. A large tree : branchlets and petioles glabrous : leaflets 7–9, stalked, ovate-orbicular to ovate-lanceolate, sparingly denticulate or entire, pale and glabrate or slightly pubescent beneath : wing of samara little decurrent.—Frequent throughout in the upland woods. May. Very variable.

**2. F. lanceolata** Borck. GREEN ASH. 40°–60° high : wing of samara noticeably decurrent : leaflets less pale below, glabrate or pubescent : otherwise resembles the last.—In low grounds throughout, especially along the Missouri River. May.

**3. F. Pennsylvanica** Marsh. RED ASH. Differs from the last in having the twigs, petioles and lower leaf surface velvety pubescent.—Growing with the last around Hiffner's Lake near Atherton and Fish Lake near Sibley. May.

FAMILY 99. **GENTIANACEAE** Dumort.

Glabrous herbs with opposite, entire, sessile, simple leaves without stipules, and perfect, regular, cymose or clustered flowers. Divisions of the calyx and corolla 4–12 each. Stamens as many as, and alternate with, the corolla lobes. Ovary superior, 1-celled, with two parietal placentae and many ovules. Capsule dehiscent by two valves.

| | |
|---|---|
| Style filiform ; anthers twisting in age. | |
| Corolla salver-form. | 1. ERYTHRAEA. |
| Corolla rotate. | 2. SABBATIA. |
| Style stout, short or none ; anthers not twisting. | 3. GENTIANA. |

### 1. ERYTHRAEA Neck.

Parts of the flower four to five.

**1. E. calycosa** Buckl. WESTERN CENTAURY. 1° high : leaves linear-oblong : flowers 1′–2′ long, pinkish : corolla lobes obtuse.—Found as a waif along the Santa Fe Railroad between the mouths of Rock and Sugar Creeks. July.

### 2. SABBATIA Adans.

Flowers pinkish, handsome.

**1. S. campestris** Nutt. PRAIRIE PINK. Annual, 4′–12′ high : leaves ovate to ovate-oblong : branches alternate : capsule 5-winged, its lobes

lanceolate: flower 18″ broad.—Found as a waif near Sheffield, Courtney and Lee's Summit. August–September.

### 3. GENTIANA L. Gentian.

Calyx usually 5-cleft. Corolla (in ours) funnel-form or salver-form with membranous plaits in the sinuses, 1′–2′ long.

| | |
|---|---|
| Corolla bluish. | |
| Lobes of corolla spreading. | 1. *G. puberula.* |
| Lobes of corolla connivent. | 2. *G. Andrewsii.* |
| Corolla yellowish-white. | 3. *G. flavida.* |

**1. G. puberula** Michx. Perennial, 12′–18′ high: stems puberulent: leaves oblong-lanceolate: corolla bright blue within, greenish without: anthers separate.—Frequent locally on prairies, Hickman's Mills, Lee's Summit, Grain Valley. August–September.

**2. G. Andrewsii** Griseb. Perennial, 1°–2° high: leaves ovate-lanceolate, triple-nerved, rough-margined: corolla light blue, its lobes almost obsolete: anthers cohering into a tube.—In moist rich woods, Brush Creek, Independence, Sibley. Rare. September.

**3. G. flavida** A. Gray. Perennial, 1°–2½° high: leaves ovate-lanceolate, triple-nerved, smooth-margined: flowers nearly 2′ long: corolla lobes erect, but not spreading: anthers connivent.—On woody hillsides, Swope Park, Brush Creek, Dodson, Independence. Locally common and occurring in big patches. August–September.

## Family 100. APOCYNACEAE Lindl.

Plants with milky juice, entire leaves without stipules, and perfect regular flowers. Divisions of calyx and corolla five each. Stamens five, alternate with the corolla lobes, separate. Pollen granular. Ovary superior, composed of two distinct carpels. Fruit a follicle.

### 1. APOCYNUM L. Dogbane.

Herbs with opposite leaves and pinkish-white flowers in corymbose cymes. Corolla bell-shaped, bearing five appendages in the throat. Seeds hairy-tufted.

| | |
|---|---|
| Corolla lobes revolute. | 1. *A. urceolifer.* |
| Corolla lobes erect. | |
| Plant glabrous or sparingly pubescent. | 2. *A. hypericifolium.* |
| Plant strongly velvety-pubescent. | 3. *A. pubescens.* |

**1. A. urceolifer** G. S. Miller. 2°–4° high, nearly glabrous throughout: branches divergently forked: leaves ovate, short-petioled: cymes loose: corolla tube exceeding calyx lobes.—In dry soil near Tarsney and Little Blue Tank. Local. June–August.

**2. A. hypericifolium** Ait. 2°–5° high: branches erect: lower leaves short-petioled to cordate-clasping, usually cordate at base, oval to oblong: upper leaves petioled: flowers white-pink to greenish-pink.—Abundant in low grounds throughout and very variable. June–September.

**3. A. pubescens** R. Br. Resembles the last but the whole plant-especially the lower surface of the leaves, is very velvety-pubescent. Rather common in low grounds throughout. June-September.

## Family 101. **ASCLEPIADACEAE** Lindl.

Plants with milky juice, entire, non-stipulate leaves and umbellate flowers. Divisions of calyx and corolla five each. Stamens five, connivent. Anthers 2-celled, each cell containing a waxy pollen mass. Ovary superior, 2-celled. Styles two, connected by the 5-angled stigma. Stigma and pollen masses connected by five glandular bodies growing in the angles of the stigma. Between the stamens and corolla there is a ring or a disk. Fruit of two follicles. Seeds bearing a long coma.

| | |
|---|---|
| Corolla strongly reflexed. | |
| Crown of five hood-like bodies each bearing an incurved horn within. | 1. Asclepias. |
| Crown like the last, but hornless. | 2. Acerates. |
| Corolla merely spreading. | |
| Herbs. | 3. Asclepiodora. |
| Vines. | 4. Gonolobus. |

### 1. **ASCLEPIAS** L. Milkweed.

Erect perennial herbs.

| | |
|---|---|
| Leaves alternate, lanceolate. | 1. *A. tuberosa.* |
| Leaves opposite, broad. | |
| Flowers rose-purple. | 2. *A. purpurascens.* |
| Flowers pinkish or yellowish-white. | |
| Leaves lanceolate. | 3. *A. incarnata.* |
| Leaves ovate-oblong. | |
| Stems glabrous. | |
| Peduncles shorter than the leaves. | 4. *A. Sullivantii.* |
| Peduncles much longer than the leaves. | 5. *A. amplexicaulis.* |
| Stems finely soft-pubescent. | 6. *A. Syriaca.* |
| Leaves verticillate, linear. | 7. *A. verticillata.* |

**1. A. tuberosa** L. Butterfly Weed. 1°–2° high, pubescent: leaves nearly sessile, cordate at base: flowers deep orange-colored in numerous umbels: follicles erect on the decurved fruiting pedicels.—Common in open fields and prairies. June–July.

**2. A. purpurascens** L. Purple Milkweed. 2°–4° high, puberulent: leaves petioled, tomentose beneath: umbels few: follicles erect on the deflexed fruiting pedicels.—Frequent throughout in rocky woods. May–June.

**3. A. incarnata** L. Swamp Milkweed. 2°–5° high, nearly glabrous: leaves short petioled, smooth: umbels numerous: follicles and fruiting pedicels erect.—Not uncommon in low swampy grounds throughout. July–September.

**4. A. Sullivantii** Engelm. 2°–5° high, glabrous: leaves oblong, thick, obtuse or cordate at base, short-petioled or sessile: umbels terminal and lateral: follicles erect on the deflexed fruiting pedicels, slightly

echinate.—On wet prairies especially in the valleys of the Big and Little Blue and Fire Prairie Creek. Abundant locally. June–July.

**5. A. amplexicaulis** J. E. Smith. 1°–2½° high, glabrous: leaves ovate-orbicular, clasping: umbel usually solitary: follicles glabrous, erect on the decurved fruiting pedicels.—Locally frequent on dry prairies and banks near Waldo Park, Lee's Summit, Grand View, Lake City and Buckner May–June.

**6. A. Syriaca** L. COMMON MILKWEED. 2°–5° high, finely pubescent: leaves oval-oblong, short-petioled, pubescent: umbels several: follicles erect on the decurved fruiting pedicels, densely tomentose and echinate.—Abundant throughout in fields and waste places. July–September.

**7. A. verticillata** L. WHITE MILKWEED. 1°–3° high, pubescent: leaves long-linear, numerous: flowers white: glabrous follicles and fruiting pedicels erect.—Not uncommon in dry fields and prairies throughout. June–July.

### 2. ASCLEPIODORA A. Gray.

Resembles *Asclepias*, but corolla lobes spreading. Hoods hornless, crested within.

**1. A. viridis** (Walt.) A. Gray. GREEN MILKWEED. 1°–2° high, glabrous: leaves opposite or alternate, ovate-oblong, short-petioled, mucronate: flowers 1′ broad, greenish with a purplish hood.—Rare and local in dry soil near Pixley's, Lee's Summit, Grain Valley and Grand View. June.

### 3. ACERATES Ell. MILKWEED.

Differs from *Asclepias* in the hornless hoods.

| | |
|---|---|
| Flowers white. | 1. *A. angustifolia.* |
| Flowers greenish. | |
| Crown sessile. | 2. *A. viridiflora.* |
| Crown on a short column. | 3. *A. Floridana.* |

**1. A. angustifolia** (Nutt.) Dec. PRAIRIE MILKWEED. 1°–2° high, slightly puberulent: leaves elongated-linear: umbels axillary, short-peduncled or sessile: hoods three-toothed at the apex.—Locally frequent on rocky prairies near Waldo Park, Grand View and Lee's Summit. June–July.

**2. A. viridiflora** (Raf.) Eaton. GREEN MILKWEED. 1°–3° high, downy to glabrate: leaves oval or oblong-ovate: umbels sessile or short-peduncled: hoods about equalling the anthers: hoods entire.—Rather rare in dry rocky places near Waldo Park and Lee's Summit. June–August.

Var. **Ivesii** Britton. Leaves oblong-lanceolate.—Dry places throughout especially in the southern part, but not abundant.

Var. **linearis** A. Gray. Leaves linear.—Prairies near Buckner.

**3. A. Floridana** (Lam.) Hitchcock. 1°–3° high, glabrate to hairy: leaves linear-lanceolate: umbels peduncled: hoods much shorter than

the anthers: hoods entire.—Locally common on moist prairies near Atherton, Dodson, Waldo Park, Lake City and Lee's Summit. July–September.

### 4. GONOLOBUS Michx.

Twining vines with opposite, long-petioled, cordate-ovate leaves, and flowers in axillary peduncled cymes. Corolla lobes erect, somewhat twisted. Crown of five membranous 2-horned bodies. Anthers terminated by a white dilated appendage.

**1. G. laevis** Michx. CLIMBING MILKWEED. 4°–12° long, puberulent: flowers whitish: pods 3′ long, smooth.—Common in thickets, especially in the bottoms along the Missouri River. July–September.

## FAMILY 102. CONVOLVULACEAE Vent.

Herbaceous vines with alternate leaves, no stipules and large axillary regular and perfect flowers. Calyx 5-parted or divided. Corolla gamopetalous, 5-angled or lobed. Stamens five, alternate with the corolla lobes. Ovary superior, 2–3-celled or falsely 4–6-celled, with two erect ovules in each cell. Fruit a capsule.

| | |
|---|---|
| Stamens and styles exserted. | 1. QUAMOCLIT. |
| Stamens and styles included. | |
| Stigmas capitate or subglobose. | 2. IPOMOEA. |
| Stigmas filiform or oblong. | 3. CONVOLVULUS. |

### 1. QUAMOCLIT Moench.

Sepals long-pointed. Corolla salver-form. Stigmas capitate.

**1. Q. coccinea** (L.) Moench. RED MORNING GLORY. Leaves ovate-cordate, acuminate-pointed: flowers red, 1′ long.—Frequent in waste places at Kansas City; also occurs in bottoms near Courtney and Atherton. July–October.

### 2. IPOMOEA L. MORNING GLORY.

Corolla funnel form or campanulate.

| | |
|---|---|
| Stigma entire or 2-lobed. | |
| Corolla 4″–6″ long. | 1. *I. lacunosa.* |
| Corolla 2′–3′ long. | 2. *I. pandurata.* |
| Stigma 3-lobed. | |
| Leaves entire. | 3. *I. purpurea.* |
| Leaves 3-lobed. | 4. *I. hederacea.* |

**1. I. lacunosa** L. SWAMP MORNING GLORY. Pubescent annual, 2°–4° long: leaves ovate, cordate, entire or 3-lobed: peduncles short, 1–3-flowered: sepals acuminate, ciliate: flowers white.—In bottom lands, Sheffield, Courtney, Atherton and Sibley. Local. July–October.

**2. I. pandurata** (L.) Meyer. MAN OF THE EARTH. Glabrous perennial, 2°–8° long: root large: leaves broadly ovate-cordate: peduncles 1–5-flowered: flowers white with purple lines: sepals obtuse.—On dry banks throughout, but not common. July–September.

**3. I. purpurea** (L.) Roth. PURPLE MORNING GLORY. Hairy annual, 6°–25° long: leaves heart-shaped, acuminate, entire: sepals lanceolate:

corolla light blue, purple, red or white.—Often abundant in waste places. July–October.

**4. I. hederacea** Jacq. CORN-FIELD MORNING GLORY. Like the last but leaves 3-parted, the sepals acuminate-pointed, and flowers light blue.—This is often very common in fields, especially in the Missouri River bottoms. July–October.

### 3. CONVOLVULUS L.

Corolla funnel-form to campanulate. Our species are perennials with showy pink or white flowers.

Calyx with two large bracts at base.
  Flowers single. 1. *C. sepium.*
  Flowers double. 2. *C. Japonicus.*
Calyx without bracts at base. 3. *C. arvensis.*

**1. C. sepium** L. BINDWEED. 3°–12° long, glabrous or pubescent: leaves triangular-hastate, glabrous or pubescent below, but nearly always glabrous above, the basal lobes obliquely truncate: one peduncle in the axil of each leaf.—Common throughout in sunny places. June–September.

Var. **fraterniflorus** Mackenzie & Bush, n. var. Leaves 3′–4′ long, strongly appressed-pubescent on both sides: two 1-flowered peduncles in the axil of each leaf, the one longer and the other shorter than the petiole: flowers white.—Dry banks near Martin City. July.

**2. C. Japonicus** Thunb. JAPANESE MORNING GLORY. A few feet long: leaves narrowly hastate: flowers pink, double.—Thoroughly established along the railroad at Sibley. July–September.

**3. C. arvensis** L. SMALL BINDWEED. 1°–3° long, glabrous: leaves ovate-oblong, sagittate, the basal lobes spreading, acute: peduncles 1–3-flowered, bearing some small bracts.—Along railroads and in waste places in about a dozen widely separated localities.—May–September.

## FAMILY 103. CUSCUTACEAE Dumort.

Whitish or yellowish parasites with scale-like leaves and flowers as in CONVOLVULACEAE. Cotyledons none. The lower part of the stems entirely disappear at flowering time and leave the plants wholly dependent on their host.

### 1. CUSCUTA L. DODDER.

Flowers white, cymose-clustered, often bracted at base. Corolla with scales in its throat. Capsule indehiscent (in ours).

Calyx gamosepalous.
  Corolla lobes acute.
    Calyx lobes obtuse. 1. *C. arvensis.*
    Calyx lobes acute.
      Flowers nearly sessile. 2. *C. Polygonorum.*
      Flowers distinctly pedicelled. 3. *C. Coryli.*

| | |
|---|---|
| Corolla lobes obtuse. | |
| Styles equalling the capsule. | 4. *C. Cephalanthi.* |
| Styles shorter than the capsule. | 5. *C. Gronovii.* |
| Calyx of distinct sepals. | 6. *C. paradoxa.* |

**1. C. arvensis** Beyrich. Low climbing : flowers 1″ long, nearly sessile : corolla tips incurved : scales large, deeply fringed : corolla persistent at base of the depressed-globose capsule.—In barrens west of Lee's Summit and southwest of Tarsney. Local. June–July.

**2. C. Polygonorum** Engelm. Low climbing : flowers nearly sessile : scales small : styles shorter than the ovary : capsule depressed-globose. —Frequent throughout in low moist grounds. August–September.

**3. C. Coryli** Engelm. Low climbing : flowers 1″ long, short-pedicelled : fringe of scales little or none : capsule depressed-globose.—On a dry bank in Rush Bottom near Courtney. Local. August–September.

**4. C. Cephalanthi** Engelm. High climbing : flowers 1″ long, short-pedicelled, in panicled cymes : calyx lobes obtuse : scales fringed : capsule depressed-globose.—On willows, etc., along the Missouri River near Sheffield and Courtney. Not common. August–September.

**5. C. Gronovii** Willd. Climbing, 2°–6° high : flowers 1½″ long, short-pedicelled : calyx lobes obtuse : scales copiously fringed : capsule subglobose or oblong-globose.—In moist woods near Atherton and Sibley. Locally abundant. August–September.

**6. C. paradoxa** Raf. Flowers sessile, 1½″ long, in very dense clusters, 6″–9″ thick : tips of sepals and of the numerous bracts recurved-spreading : scales strongly fringed : styles 2–4 times the length of the ovary.—Dry woods and hills throughout, especially in the southern part. Rather common. August–September.

## Family 104. **POLEMONIACEAE** DC.

Herbs with nearly regular flowers. Calyx and corolla lobes five each. Stamens five, alternate with the corolla lobes. Ovary superior, 3-celled, with 2–many ovules in each cell. Style solitary. Stigmas three. Capsule loculicidal, 3-valved.

| | |
|---|---|
| Leaves opposite, entire. | 1. Phlox. |
| Leaves alternate, pinnate. | 2. Polemonium. |

### 1. **PHLOX** L. Wild Sweet William. Wild Phlox.

Perennial herbs with blue, red or white flowers in terminal cymes or panicles. Corolla salver-form with a long narrow tube.

| | |
|---|---|
| Flowers in panicled cymes. | 1. *P. paniculata.* |
| Flowers in corymbed or simple cymes. | |
| Plants without sterile prostrate shoots at base. | 2. *P. pilosa.* |
| Sterile prostrate shoots present. | 3. *P. divaricata.* |

**1. P. paniculata** L. Glabrous, 1½°–4° high : leaves ovate-lanceolate : flowers short-pedicelled : calyx teeth subulate : corolla lobes entire, pink, purple or white.—Occasionally escaping from gardens to roadsides. July–September.

**2. P. pilosa** L. 1°–2° high, hairy to nearly glabrous: leaves linear-lanceolate, acuminate, spreading: corolla lobes entire, reddish.—Prairies and barrens throughout the southern part, especially along the railroad near Lee's Summit. April–May.

**3. P. divaricata** L. 1°–2° high, finely pubescent: leaves ovate-lanceolate, acute: corolla bluish, its lobes obcordate to entire.—Common throughout in damp woods. April–May.

### 2. POLEMONIUM L.

Perennial herbs with blue cymose-paniculate flowers. Corolla bell-shaped.

**1. P. reptans** L. JACOB'S LADDER. 6′–20′ high, nearly glabrous: leaflets 5–15, oblong-lanceolate, entire: flowers 6″ broad: stamens included.—In rich woods near Westport (very rare), and along Sni-a-bar Creek (abundant). April–May.

## FAMILY 105. HYDROPHYLLACEAE Lindl.

Generally hairy herbs with perfect, regular, cymose or racemose flowers. Parts of calyx and corolla five each. Stamens five, alternate with the corolla lobes. Ovary superior, 1-celled, with two parietal placentae. Styles two, united below (in ours). Fruit a 2-valved capsule.

| | |
|---|---|
| Stamens exserted. | 1. HYDROPHYLLUM. |
| Stamens included. | 2. MACROCALYX. |

### 1. HYDROPHYLLUM L. WATER LEAF.

Corolla white or pale blue, bell-shaped, its lobes convolute in the bud, with five linear appendages within. Ovary hairy. Seeds 1–4. Flowers cymose.

| | |
|---|---|
| Stems nearly glabrous; corolla lobes not appendaged. | 1. *H. Virginicum.* |
| Stems hirsute; corolla lobes appendaged. | 2. *H. appendiculatum.* |

**1. H. Virginicum** L. Perennial, 8′–20′ high: leaves pinnately divided into 5–7 oblong, acute and cut-toothed lobes: flowers 3″–4″ long.—In woods throughout. Rather common. May–June.

**2. H. appendiculatum** Michx. Biennial, 12′–30′ high: lower leaves pinnately divided into 5–7 ovate and cut-toothed lobes: upper leaves ovate, variously lobed: flowers 6″–7″ long.—Common in rich woods. May–June.

### 2. MACROCALYX Trew.

Annual herbs. Calyx 5-lobed, greatly enlarged in fruit. Corolla whitish, about the length of the calyx, with five small appendages within. Lower leaves opposite, upper alternate.

**1. M. Nyctelea** (L.) Kuntze. Stems pubescent, weak, at length widely spreading: leaves ovate-oblong, divided into 7–13 oblong sparingly toothed lobes: peduncles 1-flowered, opposite the leaves: corolla about 2″ long.—Very abundant in moist places. April–June.

## FAMILY 106. **BORAGINACEAE** Lindl.

Herbs with alternate entire leaves and perfect, usually regular flowers. Divisions of calyx and corolla five each. Stamens five, each inserted on the tube of the corolla and alternate with its lobes. Ovary deeply 4-lobed, in fruit forming four 1-seeded nutlets. Style solitary. Stigmas one or two.

| | |
|---|---|
| Corolla regular. | |
| Nutlets armed with pricklets. | |
| Pricklets covering the nutlets. | 1. CYNOGLOSSUM. |
| Pricklets on the margin or back. | 2. LAPPULA. |
| Nutlets unarmed. | |
| Nutlets attached to receptacle just above their base: flowers blue. | 3. MERTENSIA. |
| Nutlets attached by their base to receptacle: flowers not blue. | |
| Styles included. | |
| Racemes not leafly-bracted. | 4. MYOSOTIS. |
| Racemes leafy-bracted. | 5. LITHOSPERMUM. |
| Styles exserted. | |
| Corolla lobes erect, acute. | 6. ONOSMODIUM. |
| Corolla lobes spreading. | 7. SYMPHYTUM. |
| Corolla irregular. | 8. ECHIUM. |

### 1. **CYNOGLOSSUM** L.

Corolla funnel-form, its throat closed by five scales. Nutlets attached laterally, spreading.

**1. C. officinale** L. HOUND'S TONGUE. Pubescent biennial, 2°–4° high: leaves oblong to lanceolate, the lower slender-petioled, the upper sessile: corolla 4″–5″ broad, reddish-purple.—Not uncommonly introduced in fields. May–July.

### 2. **LAPPULA** Moench. STICKSEED.

Corolla salver-form, its throat closed by five small scales. Nutlets attached laterally, erect.

| | |
|---|---|
| Leaves linear to linear oblong. | |
| Pricklets on margin of nutlets in two rows. | 1. *L. Myosotis.* |
| Pricklets on margin of nutlets in one row. | 2. *L. Texana.* |
| Leaves ovate-oblong. | 3. *L. Virginiana.* |

**1. L. Myosotis** Moench. Annual, 1°–2° high, hirsute-pubescent: flowers white or blue: pricklets in two rows on the margins of the nutlets.—Rarely found in waste places around Kansas City. May–July.

**2. L. Texana** (Scheele) Britton. Erect or spreading annual, 4′–20′ high, hirsute-pubescent: flowers white or blue: prickles in one row on the margins of the nutlets: pricklets sometimes united into a cup.—Sparingly adventized along railroads from Kansas City to Courtney and Atherton. May–June.

**3. L. Virginiana** (L.) Greene. BEGGAR'S TICKS. Biennial, 2°–4° high, strigose-hirsute: radical leaves round-ovate: flowers white: fruit-

ing pedicels recurved : nutlets covered on the margins and back with pricklets.—Common in woods throughout. July–September.

### 3. MERTENSIA Roth.

Corolla trumpet-shaped, its throat naked (in ours).

**1. M. Virginica** (L.) DC. BLUE BELLS. Perennial, 1°–2° high, very glabrous : leaves obovate, petioled : flowers in corymb-like racemes very showy, 1′ long.—Locally common in rich woods near Sheffield, Little Blue Tank to Adams, and Grain Valley. April–May.

### 4. MYOSOTIS L.

Corolla salver-form, its throat crested. Flowers in one-sided racemes.

**1. M. Virginica** (L.) B.S.P. FORGET-ME-NOT. Hispid annual, 3′–12′ high : leaves linear-oblong to spatulate : fruiting pedicels short : calyx hairs with hooked tips : sepals unequal : flowers small, whitish.—Sandy soil in the Missouri River bottom from Kansas City to Sibley ; possibly not native. April–May.

### 5. LITHOSPERMUM L.

Corolla salver-form to funnel-form, its throat crested or pubescent. Flowers in leafy-bracted spikes.

| | |
|---|---|
| Flowers white or whitish-yellow. | |
| Annual or biennial. | 1. *L. arvense.* |
| Perennial. | 2. *L. latifolium.* |
| Flowers bright yellow. | |
| Stems hirsute. | 3. *L. canescens.* |
| Stems appressed-pubescent. | 4. *L. linearifolium.* |

**1. L. arvense** L. CORN GROMWELL. 6′–20′ high, appressed-pubescent : leaves linear-lanceolate : corolla 3″ long : nutlets brown and pitted.—Locally adventized in waste places. Westport, Independence, and Grain Valley. April–May.

**2. L. latifolium** Michx. WOOD GROMWELL. 1½°–3° high, rough-puberulent : leaves ovate-lanceolate : corolla 2″–3″ long : nutlets white, smooth and shining. Rarely occurs in rich woods. Westport and along the Little Blue River ; also near Quindaro, Kansas. May–June.

**3. L. canescens** (Michx.) Lehm. HOARY PUCCOON. Perennial, 6′–15′ high, hoary : leaves linear-oblong : corolla 6″ long, not bearded within, its lobes entire : nutlets white, smooth and shining.—Frequent on prairies and rocky hills throughout the southern part. April–May.

**4. L. linearifolium** Goldie. PUCCOON. Perennial, 6′–18′ high, strigose-pubescent : leaves linear : corolla 1′ long, its lobes erose-denticulate : later flowers small and cleistogamous : nutlets white, smooth and shining.—Rocky woods and prairies near Westport, Waldo Park and Little Blue Tank. Local. April–May.

### 6. ONOSMODIUM Michx. False Gromwell.

Flowers greenish-white in elongated, leafy racemes: corolla tubular, not appendaged, its lobes acute: nutlets smooth, bony.

Plant green or greenish-yellow. 1. *O. Carolinianum.*
Plant grayish-green. 2. *O. molle.*

**1. O. Carolinianum** (Lam.) DC. 2°–4½° high, very rough-pubescent: leaves oblong-lanceolate, acute: nutlets 1½″ long, ovoid-globose.—Frequent throughout in dry ground. June–July.

**2. O. molle** Michx. 1°–2° high, grayish, less pubescent: leaves ovate-lanceolate, acute: nutlets 2″ long, ovoid.—Frequent on prairies throughout the southern part. May–June.

### 7. SYMPHYTUM L.

Rough-hairy perennials with flowers in raceme-like clusters. Corolla tubular, inflated, its lobes obtusish. Scar left by nut broad, concave, toothed.

**1. S. officinale** L. Comfrey. 2°–3° high: leaves ovate-lanceolate, decurrent on the stem: corolla yellowish-white, 8″ long.—Sparingly escaped from cultivation at Independence. June–July.

### 8. ECHIUM L.

Bristly-hairy herbs with flowers in leafy-bracted spikes. Corolla tubular-funnel-form, its limb with unequally spreading lobes. Styles and stamens exserted.

**1. E. vulgare** L. Blueweed. 1°–3° high: leaves oblong to linear-lanceolate, sessile: flowers reddish-blue, nearly 1′ long. Rarely adventized along railroads near Sheffield and Lee's Summit. June–August.

## Family 107. VERBENACEAE J. St. Hil.

Herbs with opposite leaves and perfect flowers. Divisions of calyx and corolla five each. Stamens four, didynamous, alternate with the corolla lobes. Ovary superior, 2–4-celled, each cell 1-ovuled, separating at maturity into 2–4 indehiscent nutlets. Style one. Stigmas one or two.

Nutlets four. 1. Verbena.
Nutlets two. 2. Phyla.

### 1. VERBENA L. Vervain.

Flowers in spikes, bracted. Corolla somewhat irregular, its limb 5-lobed. Ours are perennials. Many hybrids occur.

Plants strictly erect.
  Leaves distinctly petioled.
    Flowers white. 1. *V. urticaefolia.*
    Flowers blue. 2. *V. hastata.*
  Leaves sessile.
    Leaves linear to lanceolate. 3. *V. angustifolia.*
    Leaves ovate to oblong. 4. *V. stricta.*

Plants ascending or procumbent.
Corolla 2″ long. 5. *V. bracteosa.*
Corolla 6″ or more long.
Corolla reddish-purple. 6. *V. Canadensis.*
Corolla bluish-purple. 7. *V. bipinnatifida.*

**1. V. urticaefolia** L. Pubescent, 2°–5° high : leaves ovate-oblong, serrate : spikes filiform, much elongated : flowers scattered.—Common in fields and waste places. June–September.

**2. V. hastata** L. Puberulent, 2°–6° high : leaves oblong-lanceolate, serrate, sometimes 3-lobed : spikes slender, densely flowered.—Not uncommon in fields and waste places. May–September.

**3. V. angustifolia** Michx. Slightly pubescent, 6′–2° high : leaves somewhat toothed : spikes slender, densely flowered : flowers blue.—Common in barrens throughout the southern part. June–September.

**4. V. stricta** Vent. Soft-pubescent, 2°–4° high : leaves serrate : spikes stout, closely flowered : flowers blue.—Abundant in fields and waste places. June–September.

**5. V. bracteosa** Michx. Rough-pubescent : leaves pinnately incised, usually 3-parted : spikes dense and stout, with long bracts : flowers blue.—Common in sandy soil and in waste places. April–September.

**6. V. Canadensis** (L.) Britton. WILD VERBENA. Somewhat pubescent : leaves more or less pinnately parted and toothed, often 3-cleft : flowers showy, 6″–8″ broad, in dense capitate spikes : bracts usually not longer than the calyx.—Common on rocky prairies and in barrens throughout the southwestern part. May–September.

**7. V. bipinnatifida** Nutt. Resembles the last but has smaller deeper purple flowers, the leaves are more divided and the bracts often surpass the calyx.—Found at Sheffield and Courtney as a waif. May–September.

### 2. PHYLA Greene.

Corolla somewhat 2-lipped, the lower lip 3-lobed, the upper notched.

**1. P. lanceolata** (Michx.) Greene. FOG-FRUIT. Extensively creeping, appressed-pubescent : leaves ovate to oblong-lanceolate, serrate above : flowers in dense capitate spikes on peduncles exceeding the leaves.—Common in wet places. June–October.

## FAMILY 108. LABIATAE B. Juss.

Aromatic herbs with square stems, opposite leaves and no stipules. Divisions of calyx five, rarely four. Corolla gamopetalous, 4–5-lobed, regular or 2-lipped. Stamens four, or two. Ovary superior, 4-lobed, or 4-parted, each cell containing a single erect ovule. Style solitary, 2-lobed at the summit. Fruit of four 1-seeded nutlets.

Corolla regular or nearly so.
Flowers blue. 2. ISANTHUS.
Flowers white ; fertile stamens four. 19. MENTHA.
Flowers white ; fertile stamens two. 18. LYCOPUS.
Corolla irregular.

| | |
|---|---|
| Fertile stamens two. | |
| Calyx gibbous below. | 15. HEDEOMA. |
| Calyx not gibbous below. | |
| Calyx equally 5-toothed. | 13. MONARDA. |
| Calyx 2-lipped. | |
| Flowers blue. | 12. SALVIA. |
| Flowers whitish. | 14. BLEPHILIA. |
| Fertile stamens four. | |
| Calyx 2-lipped. | |
| Calyx with a protuberance above. | 3. SCUTELLARIA. |
| Calyx with no protuberance above. | |
| Flowers in axillary clusters. | 16. MELISSA. |
| Flowers in terminal spikes. | |
| Upper lip of corolla strongly arched. | 7. PRUNELLA. |
| Upper lip of corolla not arched. | 20. PERILLA. |
| Calyx not 2-lipped. | |
| Flowers in terminal spikes. | |
| Upper pair of stamens the longer. | |
| Corolla greenish-yellow or bluish. | 5. AGASTACHE. |
| Corolla white, purple-dotted. | 6. NEPETA. |
| Lower pair of stamens the longer. | |
| Corolla seemingly 1-lipped. | 1. TEUCRIUM. |
| Corolla 2-lipped. | |
| Flowers not whorled. | 8. PHYSOSTEGIA. |
| Flowers whorled. | 11. STACHYS. |
| Flowers in axillary clusters. | |
| Calyx teeth often ten. | 4. MARRUBIUM. |
| Calyx teeth five. | |
| Calyx teeth spiny-pointed. | 9. LEONURUS. |
| Calyx teeth not spiny-pointed. | |
| Upper pairs of stamens the longer. | 6. NEPETA. |
| Lower pair of stamens the longer. | 10. LAMIUM. |
| Flowers in terminal capitate clusters. | 17. KOELLIA. |

### 1. TEUCRIUM L. Wood Sage.

Four upper lobes of corolla small, the lower prominent. Flowers purplish rose-colored.

| | |
|---|---|
| Calyx canescent. | 1. *T. Canadense.* |
| Calyx villous. | 2. *T. occidentale.* |

**1. T. Canadense** L. Perennial, 1°–3° high, downy: leaves ovate-lanceolate, serrate, petioled: flowers 6″ long.—Abundant throughout in woodlands. June–September.

**2. T. occidentale** A. Gray. Resembles the last but flowers brighter colored, and plant villous throughout.—Locally common on prairies, Dodson, Lake City, Atherton and Sibley. June–September.

### 2. ISANTHUS Michx.

Flowers axillary. Corolla bell-shaped, its tube not exceeding the calyx.

**1. I. brachiatus** (L.) B.S.P. False Pennyroyal. Annual, 6′–15′ high, viscid-pubescent: leaves lance-oblong: corolla 2″–3″ long.—Not uncommon in barrens throughout the southern part. July–September.

### 3. SCUTELLARIA L.

Upper lip of corolla arched, the lower spreading, its lateral lobes somewhat connected with the upper lip. Flowers blue.

| | |
|---|---|
| Flowers in spikes. | |
| Flowers 3″ long. | 1. *S. lateriflora.* |
| Flowers over 6″ long. | 2. *S. cordifolia.* |
| Flowers axillary. | |
| Corolla 8″ long. | 3. *S. galericulata.* |
| Corolla 4″ long. | |
| Nearly glabrous. | 4. *S. parvula.* |
| Strongly pubescent. | 5. *S. campestris.* |

**1. S. lateriflora** L. Perennial, glabrous : stems ascending, 1°–3° long : leaves ovate-lanceolate, petioled, serrate.—Often abundant in wet woods. July–October.

**2. S. cordifolia** Muhl. Perennial, pubescent, 1°–2° high, erect : leaves round-ovate, rugose, serrate, strongly cordate at base, petioled.—Not uncommon in rich woods throughout. June–July.

**3. S. galericulata** L. Perennial by stolons, smoothish, 1°–3° high, ascending : leaves ovate-lanceolate, serrate, nearly sessile.—One clump found in Rush Bottom near Courtney. July–August.

**4. S. parvula** Michx. Perennial by tuberiferous stolons, 4′–12′ high : leaves ovate, usually entire, the upper sessile.—In barrens throughout, especially in the southern part. April–May.

**5. S. campestris** Britton. Like the last, but strongly pubescent, the leaves larger, ovate-orbicular and nearly entire.—Barrens and sandy woods from Lee's Summit to Leeds, Dodson and southward. Locally common. April–May.

### 4. MARRUBIUM L.

Calyx lobes spiny-tipped. Stamens included in the tube of the corolla.

**1. M. vulgare** L. WHITE HOARHOUND. Stems 1°–2° high, very woolly : leaves round-ovate, petioled, rugose, crenate : flowers whitish.—In waste places near Kansas City, Independence, etc. Not uncommon. May–October.

### 5. AGASTACHE Clayt. GIANT HYSSOP.

Upper lobes of the calyx slightly the longer. Stamens exserted. Anther sacs parallel. Lower lip of corolla spreading, the middle lobe crenate.

| | |
|---|---|
| Flowers purplish. | 1. *A. scrophulariaefolia.* |
| Flowers greenish-yellow. | 2. *A. nepetoides.* |

**1. A. scrophulariaefolia** (Willd.) Kuntze. Pubescent, 3°–6° high : leaves ovate-cordate, serrate, petioled : bracts glabrous, crenulate.—Locally common in woods near Buckner, Independence, Sibley and Little Blue Tank. July–October.

**2. A. nepetoides** (L.) Kuntze. Like the last but glabrous: bracts entire, ciliate.—Rather frequent in woods and thickets throughout. July–October.

### 6. NEPETA L.

Upper lip of corolla erect, the lower spreading, 3-lobed. Stamens ascending under the upper lip. Anther sacs divergent.

Flowers whitish, purple-dotted. 1. *N. Cataria.*
Flowers blue. 2. *N. hederacea.*

**1. N. Cataria** L. CATNIP. 1°–3° high, whitish-downy: leaves oblong-cordate, crenate-dentate, petioled: corolla 6″ long.—Common in waste places. June–September.

**2. N. hederacea** (L.) B.S.P. GROUND IVY. Pubescent, trailing perennial: leaves cordate, crenate, petioled: flowers blue, 7″ long.—In waste places and woods at Kansas City, Independence, Courtney and Adams. Locally abundant. April–October.

### 7. PRUNELLA L.

Upper lip of calyx truncate, with three small teeth, the lower 2-cleft. Upper lip of corolla arched, embracing the stamens. Flowers in dense bracted spikes.

**1. P. vulgaris** L. SELF HEAL. Slightly pubescent, ascending perennial about 1° high: leaves ovate-lanceolate, petioled, slightly crenate: corolla purplish, 6″ long.—Not uncommon throughout in open woods and fields. June–October.

### 8. PHYSOSTEGIA Benth. FALSE DRAGONHEAD.

Corolla somewhat inflated above, its upper lip arched, entire, the lower one somewhat spreading, 3-lobed. Anther cells parallel.

**1. P. Virginiana** (L.) Benth. OBEDIENT PLANT. 1°–3½° high, glabrous: leaves oblong-lanceolate, serrate, thick, not petioled: spikes 6′ long, densely flowered: corolla 12″ long, rose-purple.—In low woods throughout, especially in the Missouri bottoms. July–September.

### 9. LEONURUS L.

Upper lip of corolla arched, entire, the lower spreading, 3-lobed. Anther cells parallel.

**1. L. Cardiaca** L. MOTHERWORT. 1°–4° high, puberulent: leaves long petioled, the lower orbicular and palmately cleft, the upper cuneate at base, 3-cleft above: corolla pale purple, densely woolly.—In waste places around houses. Not uncommon. May–October.

### 10. LAMIUM L.

Upper lip of corolla arched, entire, the lower spreading with its middle lobe strongly contracted at base and its lateral lobes small. Anther cells divergent.

**1. L. amplexicaule** L. HENBIT. Annual, pubescent, ascending: leaves orbicular, sessile or clasping, crenately-lobed: corolla purplish, 6″ long.—In Idlewild Park near Independence. Locally frequent. April–June.

### 11. STACHYS L. HEDGE NETTLE.

Corolla purple, not inflated upward, the upper lip somewhat arched, entire, the lower spreading, 3-lobed. Anther cells divergent.

| | |
|---|---|
| Calyx strongly hairy. | |
| Petioles 3″ or less long. | 1. *S. palustris.* |
| Petioles 3″–12″ long. | 2. *S. aspera.* |
| Calyx glabrous or nearly so. | 3. *S. tenuifolia.* |

**1. S. palustris** L. Perennial, 1°–4° high, hirsute: leaves oblong-lanceolate, dentate, hairy: corolla 5″–6″ long.—In low grounds in the Missouri River bottoms. Common. July–September.

**2. S. aspera** Michx. Perennial, 1°–3° high: leaves oblong-lanceolate, crenate-dentate, more or less hairy: corolla 3″–4″ long.—Infrequent in low grounds throughout. June–September.

**3. S. tenuifolia** Willd. Resembles the last but is smooth or nearly so throughout.—Common in low woods. June–September.

### 12. SALVIA L. WILD SAGE.

Ours are herbs with racemose-spicate blue flowers. Upper lip of corolla concave, nearly entire, the lower spreading, 3-lobed. Connective of the anthers bearing a perfect anther sac at the upper end, and an imperfect one or none at all at the lower.

| | |
|---|---|
| Corolla 8″–12″ long. | 1. *S. Pitcheri.* |
| Corolla 4″ long. | 2. *S. lanceolata.* |

**1. S. Pitcheri** Torr. Perennial, 3°–6° high, cinereous-puberulent: leaves oblong-linear, dentate, short-petioled or sessile: tube of corolla prominently exserted.—In dry soil throughout, especially abundant in barrens in the southwestern part. July–September.

**2. S. lanceolata** Willd. Annual, 6′–24′ high, puberulent: leaves lanceolate, serrate, petioled: tube of corolla not exserted.—Adventized in fields and waste places. Rather common. June–September.

### 13. MONARDA L.

Calyx 15-nerved, villous in the throat. Upper lip of corolla oblong-linear, arched, entire, the lower spreading, 3-lobed at the apex. Anther sacs divaricate, more or less confluent at base.

| | |
|---|---|
| Flower clusters terminal. | 1. *M. scabra.* |
| Flower clusters axillary and terminal. | 2. *M. citriodora.* |

**1. M. scabra** Beck. WILD BERGAMOT. Perennial, 1°–4° high: leaves rounded at base, ovate-lanceolate, acuminate, serrate, soft canescent: calyx teeth short, subulate: corolla reddish-purple, 15″ long.—Abundant on dry hills. June–August.

**2. M. citriodora** Cerv. LEMON MINT. Annual, 1°–3° high, puberulent: leaves lanceolate, nearly sessile, sharply serrate: calyx teeth bristle-pointed: corolla pinkish or whitish, 1′ long.—Sparingly adventized near Sheffield. July–August.

### 14. BLEPHILIA Raf.

Calyx 13-nerved, not villous in the throat, the three upper teeth awned, the two lower shorter. Corolla, etc., as in *Monarda*. Flowers in glomerules, forming terminal spikes.

**1. B. hirsuta** (Pursh) Torr. WOOD MINT. Perennial, 1°–3° high, pubescent: leaves ovate, sharply serrate, slender-petioled: outer bracts linear-lanceolate, acuminate-pointed.—Common throughout in rich woods. June–August.

### 15. HEDEOMA Pers.

Ours are annuals with blue, axillary clustered flowers. Calyx 13-nerved. Upper lip of corolla erect, emarginate, the lower 3-lobed, spreading. Anther sacs divergent.

| | |
|---|---|
| Leaves ovate-oblong, serrate, petioled. | 1. *H. pulegioides.* |
| Leaves linear, entire, sessile. | 2. *H. hispida.* |

**1. H. pulegioides** (L.) Pers. PENNYROYAL. 6′–15′ high, hairy: corolla 3″ long: sterile filaments manifest.—Abundant in dry woods. August–October.

**2. H. hispida** Pursh. SPRING PENNYROYAL. 3′–12′ high, pubescent: corolla 3″ long: sterile filaments none.—Common in barrens throughout. April–June.

### 16. MELISSA L.

Calyx 13-nerved, its upper lip three-toothed, the lower 2-parted. Upper lip of corolla notched, the lower 3-parted. Anther sacs divaricate.

**1. M. officinalis** L. GARDEN BALM. Perennial, pubescent, 1°–3° high: leaves ovate, petioled, crenate: corolla 6″ long, whitish.—Along roadsides near Independence. Rare. July–September.

### 17. KOELLIA Moench. MOUNTAIN MINT.

Tufted perennials, 1°–3° high, with white, purplish-dotted flowers. Calyx about 13-nerved, equally 5-toothed in ours. Upper lip of corolla nearly entire, a little arched, the lower 3-lobed, spreading. Anther cells parallel.

| | |
|---|---|
| Stems smooth. | 1. *K. flexuosa.* |
| Stems pubescent to downy. | |
| Leaves entire. | |
| Plant minutely pubescent. | 2. *K. Virginiana.* |
| Plant hoary-pubescent. | 3. *K. pilosa.* |
| Leaves serrulate. | 4. *K. verticillata.* |

**1. K. flexuosa** (Walt.) MacM. Nearly glabrous throughout: leaves narrowly linear, entire: heads 2″–4″ broad: calyx teeth pungently

pointed.—Frequent throughout, especially in the southern part in dry woods and prairies. June–August.

**2. K. Virginiana** (L.) MacM. Leaves linear-lanceolate, somewhat pubescent: calyx tube triangular, merely acute: heads downy, often 6″ broad.—Frequent in dry woods throughout. June–August.

**3. K. pilosa** (Nutt.) Britton. Leaves lanceolate, pubescent: calyx teeth lanceolate-subulate: heads villous-pubescent, 4″–7″ broad.—Frequent throughout in dry grounds. June–August.

**4. K. verticillata** (Michx.) Kuntze. Resembles the last, but merely puberulent: calyx teeth subulate.—Dry soil near Sheffield. June–August.

### 18. LYCOPUS L.

Flowers in axillary clusters. Calyx (4–5-toothed) and corolla (4-lobed) nearly equal in length. Anther sacs parallel.

Basal stolons long and numerous. 1. *L. Virginicus.*
Basal stolons not present. 2. *L. Americanus.*

**1. L. Virginicus** L. BUGLE WEED. 1°–3° high: leaves ovate-lanceolate, acuminate, petioled, serrate: calyx teeth four, shorter than the mature nutlets.—In wet woods along streams throughout. Locally frequent. July–October.

**2. L. Americanus** Muhl. WATER HOARHOUND. 1°–2° high: leaves ovate-lanceolate, sinuate-pinnatifid, petioled: calyx teeth five, cuspidate-pointed.—Common in wet grounds. July–October.

### 19. MENTHA L.

Strongly scented herbs with white flowers in axillary or spicate whorls. Calyx 5-toothed. Corolla 4-cleft. Stamens equal.

Flowers all axillary. 1. *M. Canadensis.*
Flowers spicate.
  Leaves not white-woolly beneath.
    Leaves nearly sessile. 2. *M. spicata.*
    Leaves petioled. 3. *M. piperita.*
  Leaves white-woolly beneath. 4. *M. alopecuroides.*

**1. M. Canadensis** L. WILD MINT. 6′–2° high, pubescent to glabrate: leaves oblong-lanceolate, serrate, short petioled: calyx hairy all over, its teeth subulate.—Common throughout in moist grounds. July–October.

**2. M. spicata** L. SPEARMINT. 1°–2° high, glabrous: leaves oblong-lanceolate, sharply serrate: spikes slim, narrow, the bracts usually conspicuous.—Along brooks around Independence. Uncommon. July–September.

**3. M. piperita** L. PEPPERMINT. Resembles the last: spikes thick, dense, the bracts less conspicuous.—Along brooks around Independence. Infrequent. July–September.

**4. M. alopecuroides** Hull. WOOLLY MINT. 2° high, white-pubescent: leaves broadly oval, obtuse, sharply serrate, short-petioled: spikes

dense, stout.—Quite a patch along the road near 27th Street and the Raytown Road, Kansas City. July–August.

### 20. PERILLA Ard.

Calyx enlarging in fruit, the upper lip truncate, 3-toothed, the lower 2-cleft. Corolla 5-cleft, somewhat irregular. Flowers purplish in terminal panicled spikes.

**1. P. frutescens** (L.) Britton. Annual, purplish, 2°–3° high, pubescent: leaves long-petioled, ovate, coarsely dentate: corolla 2″ long.—Waste places near Kansas City, Courtney and Independence; abundant in woods near Pixleys. September.

## FAMILY 109. SOLANACEAE Pers.

Plants with non-stipulate alternate leaves and perfect regular flowers. Calyx and corolla each 5-lobed. Stamens 5, alternate with the lobes of the corolla, epipetalous. Ovary superior, 2-celled, or 3–5-celled, many ovuled. Style and stigma solitary. Fruit a capsule or berry.

Non-woody plants.
- Corolla bell-shaped or spreading,
  - Fruiting calyx bladdery-inflated and enclosing the berry.
    - Corolla blue. — 1. PHYSALODES.
    - Corolla yellow. — 2. PHYSALIS.
  - Fruiting calyx not inflated and usually not enclosing the berry.
    - Plants prickly. — 3. SOLANUM.
    - Plants not prickly.
      - Flowers not yellow. — 3. SOLANUM.
      - Flowers yellow. — 4. LYCOPERSICON.
- Corolla funnel-form. — 6. DATURA.

Woody plants. — 5. LYCIUM.

### 1. PHYSALODES Boehm.

Fruiting calyx 5-angled, 5-parted. Berry 3–5-celled, dry. Flowers axillary.

**1. P. Peruvianum** Kunth. APPLE-OF-PERU. 2°–6° high, smooth: leaves ovate, sinuate-toothed, long-petioled.—Escaped from gardens near Atherton. July–September.

### 2. PHYSALIS L. GROUND CHERRY.

Fruiting calyx 5-angled, 5-cleft and 10-ribbed. Berry 2-celled, pulpy. Flowers axillary. Leaves petioled.

Annuals with fibrous roots.
- Corolla with a dark center.
  - Leaves entire near the base. — 1. *P. pubescens.*
  - Leaves sinuate to the base.
    - Leaves strongly oblique at base. — 2. *P. pruinosa.*
    - Leaves barely oblique at base. — 3. *P. Barbadensis.*
- Corolla without a dark center. — 4. *P. Missouriensis.*

Perennials.

Leaves not hairy. 5. *P. subglabrata.*
Leaves more or less hairy.
  Leaves entire.
    Pubescence sparse, not branching. 6. *P. lanceolata.*
    Pubescence heavy, branching. 7. *P. pumila.*
  Leaves sinuate-dentate.
    Pubescence sparse. 8. *P. Virginiana.*
    Pubescence strong and dense. 9. *P. heterophylla.*

**1. P. pubescens** L. Stems slender, ascending, villous-pubescent, branching from the base, 6′–18′ high: leaves ovate, oblique at base, nearly entire: fruiting calyx acuminate, sharply 5-angled.—In low sandy woods along the Missouri River. Uncommon. July–September.

**2. P. pruinosa** L. Stems stout, the branches prostrate and widely spreading, strongly pubescent: leaves ovate: fruiting calyx resembling the last.—In waste places, usually in hog-lots, Martin City, Sibley, Grain Valley, Sheffield, Independence. June–October.

**3. P. Barbadensis** Jacq. Resembles No. 1 but is stouter: stems erect, branching above: leaves repand-dentate: fruiting calyx long acuminate. —In sandy woods along the Missouri River. Uncommon. July–September.

**4. P. Missouriensis** Mackenzie & Bush, n. sp. Stems 6′–18′ high, viscid-pubescent: leaves ovate, sinuate-dentate, strongly oblique at base: flowers 3″–4″ broad: calyx lobes triangular: anthers purplish: fruiting calyx ovoid, indistinctly angled, sunken at base: berry very glutinous.—Rather common on rocky hillsides. June–September. This is *P. Lagascae* Rydb., Vol. III., Britton and Brown, Ill. Flora, 125, not *P. Lagascae* R. & S.

**5. P. subglabrata** Mackenzie & Bush, n. sp. 1°–2° high, nearly glabrous throughout: leaves ovate-lanceolate, slightly sinuate-dentate: corolla 10″ broad, yellow with a dark center: anthers purplish: fruiting calyx 10-angled, sunken at base, acuminate.—Common in waste places. May–September. (Has been referred to *P. Philadelphica* Lam.)

**6. P. lanceolata** Michx. 6′–12′ high, spreading: leaves oblanceolate to spatulate: corolla 8″ wide, with a dark center: fruiting calyx scarcely angled, not sunken at the base.—Sparingly adventized at Sheffield. May–June.

**7. P. pumila** Nutt. 1°–2° high, erect: leaves ovate to oblong-lanceolate: corolla 8″ wide, with a dark center: fruiting calyx angled, sunken at base.—Common on prairies and barrens in the southern part. May–July.

**8. P. Virginiana** Mill. 1°–2° high, more or less hairy: leaves ovate-lanceolate, from strongly toothed to nearly entire: corolla 10″ wide, with a dark center: fruiting calyx sunken at base, 5-angled.—Frequent in barrens throughout, especially in the southern part. May–June.

**9. P. heterophylla** Nees. 6′–3° high: leaves large, ovate, cordate, more or less sinuately toothed: corolla about 10″ wide, with a dark cen-

ter: fruiting calyx pubescent, angled, sunken at base.—Common in fields and waste places. May–September.

Var. **nyctaginea** (Dunal.) Rydb. Leaves subentire and less pubescent.—In waste places near Kansas City.

### 3. SOLANUM L.

Corolla wheel-shaped, 5-lobed. Anthers oblong, opening by a short terminal slit or pore. Berry globose.

| | |
|---|---|
| Plants not prickly. | |
| Flowers white ; berries black. | 1. *S. nigrum.* |
| Flowers blue ; berries red. | 2. *S. Dulcamara.* |
| Plants prickly. | |
| Flowers yellow. | 3. *S. rostratum.* |
| Flowers light bluish. | |
| Plant densely silvery-canescent. | 4. *S. elaeagnifolium.* |
| Plant hirsute, not silvery. | 5. *S. Carolinense.* |

**1. S. nigrum** L. Black Nightshade. Annual, 1°–3° high, nearly glabrous: leaves ovate, undulate, petioled: flowers 4″ broad, in lateral, umbellately 3–10-flowered clusters.—Common in waste places. July-October.

**2. S. Dulcamara** L. Bittersweet. Perennial, more or less climbing, hairy: leaves ovate or hastate, either entire or with two lobes at base: flowers 6″ broad, in compound lateral cymes.—In waste places at Independence. Locally common. June–August.

**3. S. rostratum** Dunal. Buffalo Bur. Annual, 6′–2° high, pubescent and usually very prickly all over: leaves ovate in outline, 1–2-pinnatifid: flowers racemose, 1′ broad: calyx densely prickly, enclosing the berry.—Commonly adventized in waste places. May–October.

**4. S. elaeagnifolium** Cav. White Horse Nettle. Perennial, 1°–3° high: leaves oblong-linear to oblong-lanceolate, nearly entire: flowers violet-blue, cymose, 10″ broad.—Beginning to appear along railroads, Wayne City, Sheffield. August–October.

**5. S. Carolinense** L. Horse Nettle. Perennial, 1°–2° high: leaves ovate-oblong, repand to pinnatifid: flowers light violet, cymose, 10″ broad.—Abundant in waste places. July–October.

### 4. LYCOPERSICON Mill.

Herbs with pinnately divided leaves and small yellow flowers in lateral cymes. Flowers as in *Solanum*, but anthers elongated, longitudinally dehiscent.

**1. L. esculentum** Mill. Tomato. 6′–3° high, viscid-pubescent: leaf segments ovate-lanceolate, dentate: flowers 6″ broad: berries reddish.—Frequently found in waste places and on sand-bars along the Missouri River. June–September.

### 5. LYCIUM L.

Woody, usually spiny, shrubby vines with entire leaves and small axillary flowers. Corolla funnel-form or salver-form, 5-lobed. Berries small, globose.

**1. L. vulgare** (Ait. f.) Dunal. MATRIMONY VINE. Glabrous, 3°–10° long: leaves lanceolate, short-petioled: flowers on filiform peduncles, the corolla purplish, 4″ broad.—Locally common in waste places at Kansas City, Sibley and Independence. July–September.

### 6. DATURA L. JIMSON WEED.

Rank narcotic weeds with axillary short-peduncled, showy flowers. Calyx prismatic, 5-toothed. Corolla funnel-form, its border plaited. Fruit a prickly, imperfectly falsely 4-celled capsule.

| | |
|---|---|
| Stem green; flowers white. | 1. *D. Stramonium.* |
| Stem purple; flowers violet. | 2. *D. Tatula.* |

**1. D. Stramonium** L. 2°–5° high, glabrous: leaves ovate, long-petioled, irregularly sinuate: flowers 3′–4′ long: lower prickles of the fruit shorter than the upper.—Common in barn-yards. July–September.

**2. D. Tatula** L. Closely resembles the last; prickles of the fruit about equal.—Common with the last. July–September.

## FAMILY 110. SCROPHULARIACEAE Lindl.

Herbs with non-stipulate leaves and perfect flowers. Calyx and corolla divisions 4–5 each, the corolla often 2-lipped. Stamens 2, 4 or 5, inserted on and alternate with the corolla lobes. Ovary superior, 2-celled, usually many-seeded. Style one. Stigma entire or 2-lobed. Fruit a septicidal or loculicidal capsule.

| | |
|---|---|
| Fertile stamens five. | 1. VERBASCUM. |
| Fertile stamens four with a fifth, sterile one, present. | |
| Sterile stamen a mere scale. | 3. SCROPHULARIA. |
| Sterile stamen filiform. | |
| Stamens very woolly. | 4. CHELONE. |
| Stamens not woolly. | |
| Corolla tubular. | 5. PENTSTEMON. |
| Corolla deeply 2-cleft. | 6. COLLINSIA. |
| Stamens four; all fertile. | |
| Corolla spurred. | 2. LINARIA. |
| Corolla not spurred. | |
| Corolla plainly 2-lipped. | |
| Stamens not enclosed in upper lip of corolla. | |
| Calyx 5-angled, 5-toothed. | 7. MIMULUS. |
| Calyx 5-parted. | |
| Leaves pinnatifid. | 8. CONOBEA. |
| Leaves not pinnatifid. | 9. MONNIERA. |
| Stamens enclosed in upper lip of corolla. | 17. PEDICULARIS. |
| Corolla scarcely 2-lipped. | |
| Flowers on scapes | 12. LIMOSELLA. |
| Flowers not on scapes. | |
| Flowers yellow. | 15. AFZELIA. |
| Flowers pinkish. | 16. GERARDIA. |
| Fertile stamens two. | |
| Calyx 5-parted. | |
| Sterile filaments short or wanting. | 10. GRATIOLA. |
| Sterile filaments long, 2-lobed. | 11. ILYSANTHES. |
| Calyx 4-parted. | |
| Leaves opposite. | 13. VERONICA. |
| Leaves whorled. | 14. LEPTANDRA. |

### 1. VERBASCUM L.

Erect herbs with alternate leaves and spicate or racemose flowers. Corolla rotate, 5-lobed, the lobes nearly equal. Three or all the filaments pilose.

| | |
|---|---|
| Plant densely woolly. | 1. *V. Thapsus.* |
| Plant nearly glabrous. | 2. *V. Blattaria.* |

**1. V. Thapsus** L. MULLEN. 2°–8° high: leaves oblong, crenulate, decurrent: flowers yellow in a dense spike.—An abundant weed in waste places. June–September.

**2. V. Blattaria** L. MOTH MULLEN. 1°–3° high, slender: leaves oblong, doubly dentate, the lower petioled, the upper clasping: flowers purplish-white in a loose raceme.—Locally frequent in fields near Independence and Courtney. May–July.

### 2. LINARIA Hill.

Herbs with alternate leaves and spicate-racemose flowers. Corolla nearly closed in the throat.

**1. L. vulgaris** Mill. BUTTER-AND-EGGS. Glabrous perennial, 1°–3° high: leaves linear: corolla yellow, 1′ long.—Locally naturalized in waste places, Grain Valley, Independence, Kansas City, Sibley. June–October.

### 3. SCROPHULARIA L. FIGWORT.

Perennial herbs with opposite leaves and cymose-paniculate flowers. Two upper lobes of corolla erect, longer than the lower.

| | |
|---|---|
| Sterile stamen purple. | 1. *S. Marylandica.* |
| Sterile stamen greenish-yellow. | 2. *S. leporella.* |

**1. S. Marylandica** L. 3°–8° high, nearly glabrous: inflorescence glandular-pubescent: leaves ovate, slender-petioled, sharply serrate: corolla 3″ long, dull without, shining within.—Common in thickets throughout. July–October.

**2. S. leporella** Bicknell. Closely resembles the last: corolla shining without, dull within.—Occurs locally near Sheffield and Independence. May–June.

### 4. CHELONE L.

Herbs with opposite leaves and densely spicate, bracted flowers. Corolla tube inflated, the upper lip concave, emarginate, the lower 3-lobed.

**1. C. glabra** L. TURTLE HEAD. 1°–3° high, glabrous: leaves lanceolate, short-petioled, serrate: flowers white, 1′ long.—On a hillside along the Mo. Pac. R.R. between Lee's Summit and Little Blue Tank. Rare. July–September.

### 5. PENTSTEMON Soland. BEARD TONGUE.

Herbs with opposite leaves and racemose panicled flowers. Corolla tubular, its limb slightly 2-lipped.

Branches of thyrse spreading. 1. *P. Digitalis.*
Thyrse spike-like. 2. *P. tubiflorus.*

**1. P. Digitalis** (Sweet) Nutt. 1°–4° high, glabrous, except the inflorescence: leaves ovate-oblong to lanceolate, denticulate, the lower petioled, the upper clasping: thyrse panicle-like, spreading: corolla abruptly inflated, 1′ long, white.—Common in woods and low grounds. May–July.

**2. P. tubiflorus** Nutt. Resembles the last: thyrse narrow, spike-like: corolla not abruptly inflated, 1′ long.—Occasionally adventized at Sheffield, Wayne City and Courtney. May–July.

### 6. COLLINSIA Nutt.

Annual herbs with opposite leaves and flowers verticillate in their axils. Upper lip of corolla 2-cleft, the lower 3-cleft, its middle lobe keeled and enclosing the stamens and style.

**1. C. verna** Nutt. BLUE-EYED MARY. 10′–20′ high, glabrous: leaves ovate, toothed, the lower petioled, the upper sessile: corolla 8″ long, its lower lip blue, the upper white.—Locally common in rich woods, Sheffield, Washington Park, Dodson, Grain Valley. April–May.

### 7. MIMULUS L. MONKEY FLOWER.

Herbs with opposite leaves and axillary peduncled flowers. Upper lip of corolla erect, 2-lobed, the lower spreading, 3-lobed.

Leaves sessile. 1. *M. ringens.*
Leaves petioled. 2. *M. alatus.*

**1. M. ringens** L. Glabrous perennial, 1°–2° high: leaves lanceolate, serrate: peduncles longer than the calyx: corolla violet, 12″ long.—Common in moist grounds. June–October.

**2. M. alatus** Soland. Resemble the last: stem winged: peduncles shorter than the calyx.—Common in moist grounds. June–October.

### 8. CONOBEA Aubl.

Herbs with opposite leaves and small pedicelled axillary flowers. Calyx segments equal. Upper lip of corolla 2-lobed, the lower 3-lobed.

**1. C. multifida** (Michx.) Benth. RIVER WEED. Diffusely spreading, 2′–8′ high, short-pubescent: leaves pinnatifid, petioled: corolla bluish, 2″ long.—Often common in wet sandy soil, especially along streams. June–October.

### 9. MONNIERA P. Br.

Herbs with opposite leaves and axillary flowers. Upper division of calyx broader than the other. Corolla (in ours) 2-lipped, the upper lip 2-lobed, the lower 3-lobed.

**1. M. rotundifolia** Michx. WATER HYSSOP. Stems creeping and floating, hairy: leaves ovate-orbicular, obtuse, entire: flowers white, 3″ long.—In swamps, Sheffield (abundant), Greenwood, Lake City, Courtney. May–October.

### 10. GRATIOLA L. Hedge Hyssop.

Herbs with opposite leaves and axillary flowers. Calyx segments nearly equal. Corolla somewhat 2-lipped. Flowers 2-bracteolate at base. Sterile filaments wanting in our species.

| | |
|---|---|
| Stems glandular-puberulent. | 1. *G. Virginiana.* |
| Stems glabrous. | 2. *G. sphaerocarpa.* |

**1. G. Virginiana** L. Erect annual, 1′–12′ high: leaves sessile, oblong-lanceolate, serrate: corolla white with a yellowish tube, 4″ long: pods ovoid.—Locally common in wet places, Lake City, Buckner, Grain Valley. May–July.

**2. G. sphaerocarpa** Ell. Annual, ascending, 2′–18′ long: leaves sessile, ovate-oblong, serrate: corolla white with a yellowish tube, 6″–7″ long: capsule globose.—Frequent locally in wet places, Lake City, Atherton. May–August.

### 11. ILYSANTHES Raf. False Pimpernel.

Herbs with opposite leaves and axillary flowers. Upper lip of corolla 2-cleft, the lower 3-lobed. Flowers not bracteolate at base. One of the lobes of the sterile filaments glabrous, the other glandular.

| | |
|---|---|
| Peduncles longer than the leaves. | 1. *I. gratioloides.* |
| Peduncles shorter than the leaves. | 2. *I. attenuata.* |

**1. I. gratioloides** (L.) Benth. Erect, 3′–12′ high, glabrous: leaves sessile, ovate-oblong, very sparingly toothed: flowers light purple, 4″ long: capsule exceeding the calyx.—Wet prairies in the northwestern part. Locally common. June–September.

**2. I. attenuata** (Muhl.) Small. Ascending, 3′–15′ long, glabrous: leaves sessile, ovate, very sparingly toothed: flowers as in the last: capsule about the length of the calyx.—Common throughout in wet places. June–October.

### 12. LIMOSELLA L.

Mud annuals with filiform runners, basal clustered leaves and 1-flowered peduncles. Corolla nearly regular, 5-cleft

**1. L. aquatica** L. Mudwort. Leaves 1′–5′ long, expanding into an entire linear-oblong blade: corolla whitish.—One clump found on a mud bank along the Missouri River near Courtney. July.

### 13. VERONICA L.

Lowest segment of corolla the narrowest. Capsules compressed, notched at the apex.

| | |
|---|---|
| Flowers in axillary racemes. | 1. *V. Anagallis-aquatica.* |
| Flowers axillary. | |
| Flowers white. | 2. *V. peregrina.* |
| Flowers blue. | 3. *V. arvensis.* |

**1. V. Anagallis-aquatica** L. Water Speedwell. Perennial, 1° high, glabrous: leaves ovate-lanceolate, sessile, more or less clasping,

entire : flowers bluish, bracted.—Locally frequent in wet woods two miles south of Little Blue Tank. June–July.

**2. V. peregrina** L. NECKWEED. Annual or perennial, 2′–18′ high, smooth to glandular-pubescent : lower leaves opposite, ovate-oblong, sessile, toothed, the upper alternate, linear-oblong, entire: flowers 1″ broad —A very abundant weed in fields. April–October.

**3. V. arvensis** L. CORN SPEEDWELL. Annual, 1′–8′ high, hairy : lower leaves petioled, ovate-cordate, the upper sessile : flowers 1″ broad. —Abundant, especially in shaded rocky woods. Apparently native. April-June.

### 14. LEPTANDRA Nutt.

Perennial herbs with flowers in dense terminal spikes. Corolla tubular, nearly equally 4-lobed. Stamens long-exserted. Capsule ovoid, not notched.

**1. L. Virginica** (L.) Nutt. CULVER'S ROOT. 2°–7° high, erect, glabrous : leaves 3-9-verticillate, short petioled, lanceolate, serrate, usually pubescent beneath : spikes several : flowers whitish, 2″ long.—Locally common in moist woods and prairies throughout. June–July.

### 15. AFZELIA J. G. Gmel.

Herbs with pinnately divided leaves and yellow flowers. Corolla tube short, about the length of the nearly equal spreading lobes. Stamens four, nearly equal, included.

**1. A. macrophylla** (Nutt.) Kuntze. YELLOW FOX-GLOVE. Perennial, 2°–5° high, puberulent : lower leaves pinnately divided, the lobes incised, the upper ovate-lanceolate, entire : corolla 6″ long, woolly within. —Rather frequent in shaded rocky woods. July–August.

### 16. GERARDIA L.

Herbs with opposite sessile leaves and peduncled axillary reddish-purple large flowers, forming a raceme or panicle. Corolla campanulate with a swollen tube and almost equally 5-lobed limb. Stamens four, didynamous.

| | |
|---|---|
| Flowers sessile. | 1. *G. auriculata.* |
| Pedicels not twice the length of the calyx. | |
| Capsule oblong. | 2. *G. aspera.* |
| Capsule globose. | 3. *G. purpurea.* |
| Pedicels more than twice the length of the calyx. | |
| Capsule globose. | |
| Leaves less than 1″ wide. | 4. *G. tenuifolia.* |
| Leaves 1″–2″ wide. | 5. *G. Besseyana.* |
| Capsules ovoid-oblong. | 6. *G. Skinneriana.* |

**1. G. auriculata** Michx. 1°–3° high, erect, hairy : leaves lanceolate, entire, but usually with two lobes at base : flowers 1′ long, glabrous within as are the filaments: capsule globose-ovoid.—Locally common in moist open grounds throughout. July–September.

**2. G. aspera** Dougl. 1°–2° high, branching, scabrous : leaves filiform-linear : flowers 1′ long : filament villous : capsule oblong.—Rarely occurs as a waif at Sheffield and Courtney.

**3. G. purpurea** L. Resembles the last but is less scabrous, the leaves are linear and the smaller capsule is globose.—In moist meadows, Sibley, Lake City to Buckner, Independence. Frequent locally. August–September.

**4. G. tenuifolia** Vahl. Stem branching, glabrous, 6′–20′ high: leaves linear, 6″–14″ long, somewhat scabrous: pedicels spreading: flowers 9″ long: capsules usually 2″ long: upper pedicels exceeding the leaves.—In moist grounds throughout. July–September.

**5. G. Besseyana** Britton. Like the last but the leaves 9″–18″ long, scabrous: pedicels ascending: capsules 2½″–3″ long: upper leaves exceeding the pedicels.—Common throughout in moist meadows and woods, especially along the Missouri River. July–September.

**6. G. Skinneriana** Wood. 1°–2° high, scabrous, the branches and pedicels strictly erect: leaves linear, 6″ long: pods 3″–4″ long.—Rarely occurs in barrens at Greenwood. July–September.

### 17. PEDICULARIS L.

Herbs with pinnatifid leaves and flowers in terminal spikes. Corolla 2-lipped, the upper strongly arched, the lower erect, 3-lobed, the lobes spreading. Stamens ascending under the upper lip.

**1. P. Canadensis** L. Lousewort. 6′–15′ high, hairy: leaves oblong-lanceolate, pinnately parted: corolla yellow, 10″ long, the upper lip 2-toothed at the apex.—Frequent in dry banks and prairies throughout the southern part. April–May.

## Family 111. LENTIBULARIACEAE Lindl.

Herbs with perfect, irregular flowers borne on erect scapes. Calyx 2-lipped. Corolla strongly 2-lipped, the lower lip 2-lobed, with a palate nearly closing the throat, and spurred at the base. Stamens two. Ovary superior, 1-celled, with a free central placenta bearing many ovules.

### 1. UTRICULARIA L. Bladderwort.

Ours are aquatic herbs with finely dissected bladder-bearing leaves and yellow flowers. Upper lip of corolla erect, the lower bearded in the throat.

| | |
|---|---|
| Pedicels recurved in fruit. | 1. *U. vulgaris.* |
| Pedicels erect in fruit. | 2. *U. biflora.* |

**1. U. vulgaris** L. Scapes 3–15-flowered: corolla 6″–9″ broad, the lower lip longer than the spur.—Common in ponds near Sheffield, Atherton, Sibley and Lake City. May–September.

**2. U. biflora** Lam. Scapes 1–8-flowered: corolla 3″–5″ broad, the spur nearly as long as the lower lip.—Abundant at times in the lake at Lake City. July–September.

## Family 112. OROBANCHACEAE Lindl.

Root-parasitic herbs, the leaves reduced to scales. Flowers perfect, irregular. Calyx 4–5-toothed. Corolla tubular, 2-lipped, the lower lip

3-lobed, the upper usually 2-lobed. Stamens four, didynamous, inserted on the tube of the corolla and alternate with its lobes. Ovary superior, 1-celled, with four parietal placentae, many-ovuled.

### 1. THALESIA Raf.

Brownish, glandular-pubescent plants with yellowish-white flowers. Flowers not bracted at base. Calyx nearly equally 5-cleft.

**1. T. uniflora** (L.) Britton. BROOM RAPE. Stems clustered, 3′–8′ high, 1-flowered : flowers 1′ long.—Sparingly found in Union Cemetery at Kansas City by Mrs. Ripley. April–May.

## FAMILY 113. BIGNONIACEAE Pers.

Woody plants with opposite leaves and large and showy, perfect, somewhat irregular flowers. Calyx somewhat 2-lipped, 5-lobed. Corolla tubular to campanulate, its limb 5-lobed, slightly 2-lipped. Stamens 2 or 4, alternate with the corolla lobes. Ovary superior, 2-celled, many-ovuled. Seeds flat, winged.

Leaves compound ; vines. 1. TECOMA.
Leaves simple ; trees. 2. CATALPA.

### 1. TECOMA Juss.

Calyx 5-toothed. Corolla reddish-orange, campanulate. Stamens four. Capsule compressed at right angles to the partition.

**1. T. radicans** (L.) DC. TRUMPET VINE. 5°–60° long : leaflets ovate, serrate : flowers 2′–3′ long : fruit 4′–5′ long.—Occasionally escaped from cultivation, especially around Sibley. Possibly native. June–August.

### 2. CATALPA Scop.

Flowers in terminal panicles. Calyx deeply 2-lipped. Corolla whites purple-spotted, campanulate. Stamens two with three staminodia, or four with 1 staminodium. Capsules elongated-cylindric.

**1. C. speciosa** Warder. LADY-CIGAR TREE. 30°–50° high : leave, ovate-cordate, entire, acuminate : corolla 2′ long, little mottled within, the lower lobe emarginate.—Occasionally escaped from cultivation, especially around Sibley. June–July.

## FAMILY 114. MARTYNIACEAE Link.

Herbs with opposite leaves and perfect somewhat irregular flowers. Divisions of calyx and corolla each 4–5. Fertile stamens four, didynamous, or sometimes only two. Ovary 1-celled with 2 parietal placentae or sometimes falsely 2–4-celled. Seeds wingless.

### 1. MARTYNIA L.

Viscid-pubescent herbs with long-petioled leaves and flowers in terminal racemes. Corolla whitish, campanulate, gibbous. Fruit a woody 4-celled capsule, beaked with two long incurved horns.

**1. M. Louisiana** Mill. UNICORN PLANT. 6′–2° high: leaves heart-shaped, undulate: flowers 1′–2′ long.—Occasionally adventized in fields and waste places, Hickman's Mills, Dodson, Courtney and Independence. May–September.

## FAMILY 115. ACANTHACEAE J. St. Hil.

Herbs with opposite, simple, non-stipulate leaves and perfect, more or less irregular flowers. Divisions of calyx and corolla 4–5 each. Stamens four, didynamous, or only two. Ovary superior, 2-celled. Fruit a few-seeded capsule, the seeds borne on curved projections of the placentae. Capsule elastically 2-valved.

| | |
|---|---|
| Corolla nearly regular. | 1. RUELLIA. |
| Corolla strongly 2-lipped. | 2. DIANTHERA. |

### 1. RUELLIA L. WILD PETUNIA.

Perennials with showy purplish axillary flowers, a funnel-form corolla with a large spreading border, 4 stamens and a 6–20-seeded capsule.

| | |
|---|---|
| Plant glabrous or nearly so. | 1. *R. strepens.* |
| Plant strongly hirsute. | 2. *R. ciliosa.* |

**1. R. strepens** L. 1°–3° high: leaves ovate, petioled: corolla 1′–2′ long: later flowers often cleistogamous: calyx segments linear-lanceolate, about the length of the capsule.—Common in moist woods along the Missouri River: occasional elsewhere. May–August.

**2. R. ciliosa** Pursh. 6′–18′ high: leaves oblong-ovate, sessile: flowers resembling those of the last: calyx segments narrowly linear, much exceeding the capsule.—Common in dry ground throughout. May–August.

### 2. DIANTHERA L.

Ours is a perennial herb with flowers in axillary peduncled spikes. Upper lip of corolla notched, the lower 3-cleft. Stamens two. Ovary 4 seeded.

**1. D. Americana** L. WATER WILLOW. 1°–3° high, glabrous: leaves linear-lanceolate, entire: corolla violet, less than 6″ long.—Locally common in running water from Brush Creek to Little Blue Tank and southward. May–August.

## FAMILY 116. PHRYMACEAE Schauer.

Herbs with opposite leaves and perfect irregular flowers in loosely flowered spikes. Calyx 2-lipped, the upper lip with three setaceous teeth, the lower with two much shorter teeth. Corolla 2-lipped, the tube cylindric, the upper lip emarginate, erect, the lower 3-lobed, spreading. Stamens four, didynamous. Ovary superior, 1-celled, 1-ovuled. Calyx abruptly reflexed against the axis of the spike in fruit.

### 1. PHRYMA L.

Characters of the family.

**1. P. Leptostachya** L. LOPSEED. Perennial, puberulent, 1°–3° high : leaves ovate, petioled, toothed : flowers purplish, 3″ long.—Common in woods throughout. June–July.

## FAMILY 117. PLANTAGINACEAE Lindl.

Ours are acaulescent herbs with clustered basal leaves and regular, 4-merous flowers in spikes. Corolla scarious or membranous, the four stamens inserted on its tube and alternate with its lobes, or only two. Ovary superior, 2-celled, or falsely 3–4-celled, 2–several-ovuled. Capsule circumscissile.

### 1. PLANTAGO L. PLANTAIN.

Characters of the family as given above.

| | |
|---|---|
| Leaves lanceolate or wider. | |
| Plants nearly glabrous throughout. | |
| Petioles green at the base. | 1. *P. major.* |
| Petioles purple at the base. | 2. *P. Rugelii.* |
| Plants more or less hairy. | |
| Corolla lobes spreading in fruit. | 3. *P. lanceolata.* |
| Corolla lobes closed over the fruit. | 6. *P. Virginica.* |
| Leaves linear or linear-filiform. | |
| Bracts much exceeding the flowers. | 4. *P. aristata.* |
| Bracts not exceeding the flowers. | |
| Plants white-woolly pubescent. | 5. *P. Purshii.* |
| Plants nearly glabrous. | 7. *P. elongata.* |

**1. P. major** L. Perennial : leaves long-petioled, ovate, entire, ribbed : spikes blunt : flowers perfect : sepals slightly keeled : capsule ovoid, circumscissile near the middle, 5–18-seeded.—Uncommonly introduced in Independence. May–September.

**2. P. Rugelii** Dec. Resembles the last : spikes tapering ; sepals strongly keeled : capsule oblong-cylindric, circumscissile much below the middle, 4–10-seeded.—Very common in waste places. June–October.

**3. P. lanceolata** L. Leaves lanceolate-oblong, nearly entire : scapes 1°–3° tall : spikes dense, ovoid to cylindric : flowers perfect : capsule 2-seeded.—Occasional in waste places and fields, especially between Kansas City and Dodson. May–September.

**4. P. aristata** Michx. More or less villous annual : leaves linear-filiform, entire, 3-ribbed : scapes 3′–15′ high : flowers perfect, often cleistogamous : capsule 2-seeded.—Locally very abundant in sandy fields. May–July.

**5. P. Purshii** R. & S. Resembles the preceeding species, but is woolly and the bracts do not exceed the flowers.—Has been found near Sheffield and Wayne City in sandy soil. Abundant in Clay County near Randolph, as also near Argentine, Kansas. April–June.

**6. P. Virginica** L. Annual or biennial, 1′–20′ high : leaves spatulate-lanceolate to oblong-ovate, entire or sparingly toothed : spikes linear-

cylindric: flowers subdioecious: capsule 2-seeded.—Common in dry grounds and waste places. April–June.

**7. P. elongata** Pursh. Puberulent annual, 1′–4′ high: spikes slender: flowers subdioecious: stamens only two: capsule 4-seeded.—Locally common on sterile prairies from Lee's Summit to Greenwood, and in dry woods near Grain Valley. April–May.

## FAMILY 118. RUBIACEAE B. Juss.

Plants with opposite or verticillate usually stipulate leaves and perfect, regular, nearly symmetrical flowers. Calyx coherent with the 1–10-celled ovary. Corolla gamopetalous, 4–5-lobed, variously shaped. Stamens inserted on the corolla and alternate with its lobes. Ovules 1–many in each cell of the ovary. Fruit various.

| | |
|---|---|
| Leaves opposite. | |
| Herbs: ovary with many ovules. | 1. HOUSTONIA. |
| Shrubs. | 2. CEPHALANTHUS. |
| Herbs: ovary with two ovules. | 3. DIODIA. |
| Leaves verticillate. | 4. GALIUM. |

### 1. HOUSTONIA L.

Calyx tube 4-lobed. Corolla funnel-form or salver form, 4-lobed. Stamens four. Style one. Stigmas two. Upper half of the 8–40-seeded capsule free from the calyx. Flowers dimorphous.

**1. H. minima** Beck. BLUETS. Annual, spreading, 2′–5′ high, scabrous: leaves oblong-oval, short-petioled: corolla purplish.—On prairies and in dry woods, Little Blue Tank, Lee's Summit, Greenwood, Grain Valley. April.

### 2. CEPHALANTHUS L.

Flowers white, in dense spherical heads. Calyx limb 4-lobed. Corolla funnel-form, shortly 4-lobed. Stamens four, short. Styles one. Stigmas two. Fruit dry, obpyramidal, 1–2-seeded.

**1. C. occidentalis** L. BUTTON BUSH. 3°–15° high: leaves ovate, petioled, entire: heads 1′ in diameter.—Swampy grounds throughout. Locally common. June–August.

### 3. DIODIA L.

Herbs with conspicuous stipules and small axillary flowers. Calyx limb 4-lobed (in ours). Corolla funnel-form or salver-form, 4-lobed. Stamens four. Fruit of two indehiscent 1-seeded carpels.

**1. D. teres** Walt. BUTTONWEED. Annual, erect, spreading, 3′–15′ high, rough: leaves linear-lanceolate, entire: style entire.—Adventized in waste places near Hickman's Mills, Sheffield and Lee's Summit. July–September.

### 4. GALIUM L.

Herbs with square stems, whorled leaves and small white flowers. Calyx teeth four, or obsolete. Corolla 4- or 3-lobed. Stamens four or three. Styles two. Ovary 2-celled, 2-ovuled. Fruit of two indehiscent carpels.

Fruit hispid or bristly.
  Stems strongly recurved bristly on the angles.
    Leaves 1′–3′ long. 1. *G. Aparine.*
    Leaves 1′ or less long. 2. *G. Vaillantii.*
  Stems nearly smooth on the angles.
    Leaves in fours. 3. *G. circaezans.*
    Leaves in sixes. 4. *G. triflorum.*
Fruit smooth.
  Flowers in clusters. 5. *G. tinctorium.*
  Flowers in cymes. 6. *G. concinnum.*

**1. G. Aparine** L. GOOSE GRASS. Annual, spreading: leaves in 6's or 8's, oblanceolate-linear: cymes 1–3-flowered: fruit 2″–3″ broad.—Common in shaded grounds. April–June.

**2. G. Vaillantii** DC. CLEAVERS. Like the last but the leaves smaller, the cymes 2–9-flowered and the fruit less than 1½″ broad.—Common in dry grounds. April–June.

**3. G. circaezans** Michx. WILD LIQUORICE. Perennial, 6′–18′ high, pubescent: leaves oval: cymes forking: corolla greenish.—Rather common in dry rocky woods. May–July.

**4. G. triflorum** Michx. FRAGRANT BEDSTRAW. Perennial, spreading, sweet-scented: leaves oval-lanceolate, cuspidate: peduncles 3 flowered or 3-branched: flowers greenish.—Rather common in woods. June–September.

**5. G. tinctorium** L. MARSH BEDSTRAW. Perennial, 6′–12′ high: nearly glabrous: leaves linear: corolla lobes acute: endosperm annular in cross-section.—Often common in low meadows, especially in the northeastern part. May–June.

**6. G. concinnum** Torr. & Gray. WOOD BEDSTRAW. Perennial, 6′–15′ high, scabrous: leaves linear: corolla lobes acute: endosperm lunate in cross-section: flowers in open cymes.—Common in dry woodlands. May–June.

## FAMILY 119. CAPRIFOLIACEAE Vent.

Plants with opposite leaves. Calyx tube coherent with the ovary, its limb with 3–5 divisions. Corolla gamopetalous, variously shaped, its limb 5-lobed. Stamens 5, inserted on the corolla, alternate with its lobes. Ovary inferior, 1–6-celled. Style one. Stigma capitate or 3–5-lobed. Fruit a 1–several-seeded berry, drupe or capsule.

Flowers in terminal compound cymes.
  Leaves compound. 1. SAMBUCUS.
  Leaves simple. 2. VIBURNUM.
Flowers axillary or clustered.
  Perennial herbs. 3. TRIOSTEUM.
  Woody plants.
    Corolla bell-shaped, regular. 4. SYMPHORICARPOS.
    Corolla tubular, irregular. 5. LONICERA.

### 1. SAMBUCUS L.

Shrubs with white flowers in compound cymes. Calyx minutely 3–5-toothed. Corolla rotate, 5-lobed. Stamens five. Stigmas three. Fruit a berry-like drupe containing 3–5 nutlets.

**1. S. Canadensis** L. ELDERBERRY. 3°–15° high: leaflets 3–11, ovate, acuminate, serrate: cymes somewhat flat-topped: fruit dark purple.—Abundant in open grounds. June–July.

### 2. VIBURNUM L.

Shrubs with white flowers in flat compound cymes, as in *Sambucus*. Fruit a one-seeded drupe.

| | |
|---|---|
| Leaves conspicuously acuminate. | 1. *V. Lentago.* |
| Leaves not acuminate. | 2. *V. prunifolium.* |

**1. V. Lentago** L. BLACK HAW. 5°–15° high: leaves ovate, petioled, sharply serrate, glabrous, usually long-acuminate-pointed: cymes sessile, several-rayed: drupe 6″ long, bluish-black.—Not uncommon in woodlands. May.

**2. V. prunifolium** L. BLACK HAW. About the size of the last, but the leaves are broadly oval, obtuse or acutish: cyme sessile, several-rayed, 2′–4′ broad: drupe oval, bluish-black and glaucous, 4″–5″ long.—Rocky woods east of Independence. Rather rare. May.

### 3. TRIOSTEUM L.

Perennial herbs with opposite connate-perfoliate leaves, the flowers sessile in their axils. Calyx with five rather foliaceous lobes. Corolla campanulate, gibbous at base, unequally 5 lobed. Stamens five. Stigma 3–5-lobed. Fruit a dryish drupe containing three 1-seeded nutlets.

**1. T. perfoliatum** L. FEVERWORT. 2°–4° high, hairy: leaves ovate, strongly narrowed at base: flowers brownish-purple.—Rather common in rich woods. May–June.

### 4. SYMPHORICARPOS Juss.

Shrubs with short-petioled leaves and axillary clustered flowers. Calyx slightly 4–5-toothed. Corolla campanulate, 4–5-lobed. Stamens 4–5. Stigma capitate. Fruit a 4-celled, 2-seeded berry.

**1. S. orbiculata** Moench. BUCKBUSH. BUCKBERRY. Much-branching, 2°–10° high: leaves oval, undulate, hairy beneath: style and corolla sparingly bearded: fruit reddish. Woods throughout. Probably our most common undershrub. July.

### 5. LONICERA L.

Ours is a twining shrub with opposite connate-perfoliate entire leaves. Calyx 5-toothed. Corolla tubular or funnel-form, glabrous at base, irregularly 5-lobed. Stigma capitate. Ovary 2–3-celled, many-ovuled. Fruit a several-seeded berry.

**1. L. dioica** L. HONEYSUCKLE. Glabrous, 3°–8° long: leaves glabrous and glaucous: corolla yellow: stamens hirsute below.—Occasional along the Rocky Missouri River bluffs, near Pixleys and along Brush Creek. May–June.

## Family 120. **VALERIANACEAE** Batsch.

Herbs with opposite leaves, no stipules and panicled or cymose flowers. Calyx superior. Corolla tubular or funnel-form, its limb 5-lobed. Stamens 1–4, inserted in the tube of the corolla. Ovary inferior, 1–3-celled, one of the cells containing one ovule, the other empty.

### 1. **VALERIANELLA** Poll. Corn Salad.

Annual branching herbs with cymose clustered white (in ours) flowers. Calyx minutely 4–5-toothed. Stamens three.

| | |
|---|---|
| Fruit 1″ long. | 1. *V. radiata.* |
| Fruit ½″–¾″ long. | 2. *V. stenocarpa.* |

**1. V. radiata** (L.) Dufr. 6′–12′ high: leaves oblong-lanceolate, dentate: fruit ovate-tetragonal, the empty cavities as thick as the fertile one and separated by a broad, shallow groove.—Along gravelly streams near Adams and west of Lee's Summit. May–June.

**2. V. stenocarpa** (Engelm.) Krok. Like the last but smaller: fruit oblong-tetragonal, the empty cavities narrower than the fertile one, and separated by a narrow groove.—Occurs locally in barrens throughout the southwestern part, especially west of Lee's Summit. May–June.

## Family 121. **CUCURBITACEAE** B. Juss.

Climbing tendril-bearing herbs with alternate petioled leaves and monoecious or dioecious flowers. Calyx 5-lobed. Petals usually five, separate or united, inserted on the tube of the calyx. Stamens three, two with 2-celled anthers, the other with a 1-celled anther, the anthers usually more or less united. Ovary inferior, 1–3-celled. Fruit a pepo.

| | |
|---|---|
| Flowers large, yellow. | 1. Cucurbita. |
| Flowers small, whitish. | |
| Ovary 1-celled, 1-ovuled. | 2. Sicyos. |
| Ovary 2-celled, 4-ovuled. | 3. Micrampelis. |

### 1. **CUCURBITA** L.

Flowers axillary, solitary. Calyx and corolla 5-lobed. Ovary oblong with 3–5 parietal, many-ovuled placentae.

**1. C. foetidissima** H.B.K. Wild Pumpkin. 3°–15° long, scabrous-hirsute: leaves triangular-cordate, serrulate: flowers 2′–4′ long.—Sparingly adventized at Sheffield, near Waldo Park, and at Little Blue Tank. June–July.

### 2. **SICYOS** L.

Staminate flowers corymbose, the fertile in capitate clusters. Calyx 5-toothed. Corolla rotate, deeply 5-parted. Fruit indehiscent, prickly.

**1. S. angulatus** L. One-seeded Bur Cucumber. High climbing, pubescent: leaves orbicular, 5-lobed or 5-angled, denticulate: fruit covered with stinging spines. Often common in low woods. August–October.

### 3. MICRAMPELIS Raf. Wild Balsam Apple.

Ours with corymbose-paniculate staminate flowers and usually solitary pistillate flowers. Fruit spiny, dehiscent at summit. Calyx and corolla each with 5–6 divisions. Stamens three.

**1. M. lobata** (Michx.) Greene. High-climbing, nearly glabrous: leaves sharply 5-lobed, denticulate.—Along streams, especially along the Missouri River. Not uncommon. July–October.

## Family 122. CAMPANULACEAE Juss.

Herbs with alternate, non-stipulate leaves and perfect flowers. Calyx and corolla each with five segments, the latter regular or irregular. Stamens five, inserted on the corolla, and alternate with its lobes, the anthers separate or more or less cohering. Ovary inferior, 2–3-celled, many-ovuled. Style solitary. Stigma 2–5-lobed. Fruit a capsule.

| | |
|---|---|
| Corolla regular; anthers separate. | |
| Style long-exserted, declined and curved upward. | 1. Campanula. |
| Style straight. | 2. Specularia. |
| Corolla irregular; anthers connate. | 3. Lobelia. |

### 1. CAMPANULA L.

Capsule opening by 3–5 small valves. Flowers all complete. Ovary 3-celled. (Our species differs from typical species of *Campanula* in the declined style and rotate corolla and probably represents a distinct generic type, which is more closely related to *Specularia* than to *Campanula*.)

**1. C. Americana** L. Bell Flower. Annual, 2°–7° high, pubescent: leaves ovate-lanceolate, serrate, petioled: flowers in dense terminal spikes: corolla rotate, blue, 1′ broad.—Common in rich woods. June–August.

### 2. SPECULARIA Heist. Venus' Looking Glass.

Differing from *Campanula* (as represented with us) chiefly in the earlier flowers being cleistogamous. Flowers bluish-purple, axillary.

| | |
|---|---|
| Leaves suborbicular. | 1. *S. perfoliata.* |
| Leaves lanceolate. | 2. *S. leptocarpa.* |

**1. S. perfoliata** (L.) A. DC. 6′–24′ high, hirsute: leaves cordate-clasping, crenate-dentate: capsule oblong, opening near the middle.—Common in dry soil. May–August.

**2. S. leptocarpa** (Nutt.) A. Gray. 6′–24′ high, roughish: leaves sessile, remotely serrate: capsule linear-cylindric, opening near the top.—Locally common in barrens from Brush Creek to Pixleys and southward. May–July.

### 3. LOBELIA L.

Corolla 2-lipped, the upper lip with 2 erect lobes, the lower 3-cleft, spreading. Some of the anthers bearded, unequal. Capsule 2-celled.

| | |
|---|---|
| Flowers red. | 1. *L. cardinalis.* |
| Flowers blue. | |
| Flowers nearly 1′ long. | 2. *L. syphilitica.* |
| Flowers less than 6″ long. | |
| Plant nearly glabrous. | 3. *L. spicata leptostachys.* |
| Plant hairy. | 4. *L. inflata.* |

**1. L. cardinalis** L. CARDINAL FLOWER. 1°–5° high, glabrous: leaves oblong-lanceolate, toothed: flowers (1′ or more long) in dense spike-like racemes.—In moist woods near Westport, Leeds, Sheffield, Dodson and Grain Valley. Not common. August–September.

**2. L. syphilitica** L. 1°–3° high, somewhat hairy: leaves ovate-lanceolate, denticulate: flowers in dense spike-like racemes: calyx tube with large, deflexed auricles in the sinuses.—Common in moist places. July–September.

**3. L. spicata leptostachys** (A. DC.) Mackenzie & Bush, n. comb. 1°–3° high, puberulent: stems leafy below, simple, prolonged into a long spike-like raceme: leaves oblanceolate, denticulate, obtuse: calyx of some of the flowers at least with deflexed auricles in the sinuses.—Not uncommon locally in dry soil throughout. June–July. (*L. leptostachys* A. DC.)

**4. L. inflata** L. INDIAN TOBACCO. 1°–2° high, much branched: leaves oblong-ovate, repand-dentate: flowers in short racemes: pods inflated.—Common in dry woods. June–October.

## FAMILY 123. CICHORIACEAE Reichenb.

Herbs with milky juice, alternate leaves and flowers in involucrate heads. Flowers all alike and perfect. Calyx superior, composed of bristles or scales or wanting. Corolla tubular below and with a strap shaped, 5-toothed limb. Anthers five, connate around the style into a tube. Ovary inferior, 1-celled, containing a single erect ovule. Style 2-cleft. Fruit an achene. Receptacle naked in all ours.

| | |
|---|---|
| Pappus of blunt scales. | 1. CICHORIUM. |
| Pappus of plumose bristles. | 2. TRAGOPOGON. |
| Pappus of non-plumose bristles. | |
| Heads scapose. | |
| Leaves pinnatifid. | 3. TARAXACUM. |
| Leaves not pinnatifid. | 6. NOTHOCALAIS. |
| Heads not scapose. | |
| Achenes flattened. | |
| Flowers blue. | 5. LACTUCA. |
| Flowers yellow; achenes not beaked. | 4. SONCHUS. |
| Flowers yellow; achenes beaked. | 5. LACTUCA. |
| Achenes columnar or terete. | |
| Achenes long-beaked. | 7. SITILIAS. |
| Achenes beakless. | |
| Plants leafless above. | 8. HIERACIUM. |
| Plants leafy to the flowers. | 9. NABALUS. |

### 1. CICHORIUM L.

Involucre double, the outer spreading, the inner erect. Achenes striate, not beaked.

**1. C. Intybus** L. CHICORY. Perennial, 1°–3° high, somewhat hairy: leaves lanceolate, runcinate-pinnatifid, the stem leaves clasping: flowers blue.—Occasional in waste places in Kansas City and Independence. July–September.

### 2. TRAGOPOGON L.

Involucral bracts in one series, subequal. Achenes ribbed, and long-beaked, spinulose.

**1. T. porrifolius** L. OYSTER PLANT. Biennial, 2°–3° high: leaves linear-lanceolate, entire: heads 2′ broad: involucre longer than the purple rays.—Rarely escaped from gardens in Independence; also at Sheffield. June–October.

### 3. TARAXACUM Hall.

Perennial herbs with yellow flowers solitary at the summit of hollow scapes. Involucre double, the outer spreading, the inner erect. Achenes angled and toothed, often spinulose above, long-beaked.

**1. T. officinale** Weber. DANDELION. Leaves runcinate-pinnatifid, oblong in outline: outer involucral bracts reflexed: achenes greenish-brown.—An abundant weed. April–June.

### 4. SONCHUS L. SOW THISTLE.

Ours are herbs with auriculate-clasping spiny-margined leaves and corymbose-paniculate yellow heads of flowers. Involucral bracts imbricated in several series Achenes oval to linear, flattened and ribbed.

| | |
|---|---|
| Involucre glandular-pubescent. | 1. *S. arvensis.* |
| Involucre glabrous. | |
| Auricles of the leaves acute. | 2. *S. oleraceus.* |
| Auricles of the leaves rounded. | 3. *S. asper.* |

**1. S. arvensis** L. Perennial, 1°–3° high: leaves runcinate-pinnatifid: heads 12″ high: achenes transversely wrinkled.—Rarely adventized near Sheffield. June–September.

**2. S. oleraceus** L. Annual, 1°–5° high: leaves runcinate-pinnatifid: heads 8″ high; achenes transversely wrinkled.—Not uncommon in waste places. June–September.

**3. S. asper** (L.) All. Annual, 1°–5° high: leaves from undivided to pinnatifid, spinulosely dentate: heads 8″ high: achenes not transversely wrinkled.—Common in waste places. June–September.

### 5. LACTUCA L. WILD LETTUCE.

Herbs with panicled heads of flowers. Involucre imbricated in several series. Achenes oval to linear, narrowed above or beaked.

| | |
|---|---|
| Flowers yellow; achenes long-beaked. | |
| Leaves spiny margined. | |
| Heads 3″–6″ high. | 1. *L. virosa.* |
| Heads 7″–9″ high. | 2. *L. Ludoviciana.* |
| Leaves not spiny-margined. | |

| | |
|---|---|
| Leaves not pinnatifid. | 3. *L. sagittifolia.* |
| Leaves pinnatifid. | 4. *L. Canadensis.* |
| Flowers blue ; achenes short-beaked. | 5. *L. pulchella.* |
| Flowers blue ; achenes beakless. | |
| Leaves not pinnatifid. | 6. *L. villosa.* |
| Leaves deeply lyrate-pinnatifid. | 7. *L. Floridana.* |

**1. L. virosa** L. PRICKLY LETTUCE. 1°–3° high : leaves irregularly denticulate to sinuate-denticulate, clasping at base, spiny on midrib and leaf margins : achenes striate, linear-ovate.—Has become a very abundant weed in the last few years. July–September.

**2. L. Ludoviciana** (Nutt.) DC. 2°–5° high : leaves oblong, clasping at base, deeply pinnatifid : achenes oval.—Rarely found as a waif at Sheffield. July–September.

**3. L. sagittifolia** Ell. 2°–10° high : leaves oblong-lanceolate, clasping at base, denticulate : achenes oval.—Not uncommon in dry soil. June–October.

**4. L. Canadensis** L. Like the last, but leaves deeply sinuate-pinnatifid.—Abundant in dry soil. June–October.

**5. L. pulchella** (Pursh) DC. 1°–3° high, glabrous : leaves linear-lanceolate, entire to runcinate-pinnatifid : achenes flat, lanceolate-oblong. —Found as a waif at Sheffield. June–September.

**6. L. villosa** Jacq. 2°–10° high, glabrous : leaves ovate, pointed, denticulate, tapering or abruptly narrowed into a winged petiole, sometimes with one or two additional lobes at base : achenes oblong, thick, little flattened.—In woods throughout, but not common. July–September.

**7. L. Floridana** (L.) Gaertn. Like the last but leaves deeply lyrate-pinnatifid.—Common in moist woods. July–September.

### 6. NOTHOCALAIS Greene.

Perennial herbs with linear-lanceolate, woolly, crisped-margined leaves, and large heads of yellow flowers. Involucre imbricated in several series. Achenes fusiform, 10-striate. Pappus composed of narrow scales mixed with bristles.

**1. N. cuspidata** (Pursh) Greene. FALSE DANDELION. 1° high from a thickened caudex.—Not uncommon in barrens throughout the southwestern part. April–May.

### 7. SITILIAS Raf.

Perennial herbs with large heads of yellow flowers. Principal involucral bracts in one series, with smaller ones at base. Achenes fusiform, 5-ribbed, tipped with a long filiform beak. Pappus brownish, surrounded at base by a soft-villous ring.

**1. S. Caroliniana** (Walt.) Raf. FALSE DANDELION. 1°–3° high, branched : leaves oblong-lanceolate, entire to pinnatifid.—Found as a waif along the railroad near Dodson. June–September.

### 8. HIERACIUM L.

Perennial herbs with corymbose-paniculate yellow flowers. Involucre cylindric and scarcely imbricated (in ours). Achenes ribbed, beakless, and fusiform (in ours). Pappus of brownish bristles.

**1. H. longipilum** Torr. PRAIRIE HAWKWEED. 1°–3° high, naked above: leaves oblong-spatulate, entire: stems and leaves densely very long-pubescent: involucre and peduncles glandular-bristly.—Prairies around Lee's Summit. Rare and local. July–September.

### 9. NABALUS Cass

Leafy-stemmed perennial herbs with (in ours) greenish-white, racemose-paniculate flowers. Involucre cylindric, the bracts in a single row, with smaller bractlets at base. Achenes linear-oblong, striate, not contracted above. Pappus of copious bristles.

**1. N. asper** (Michx.) Torr. & Gray. WHITE LETTUCE. 2°–6° high, rough-pubescent: leaves oblong-lanceolate, sessile, toothed: heads erect, 12–25-flowered, in a strict inflorescence: involucre hirsute-pubescent.—Not uncommon in dry woods and prairies throughout the southwestern part. August–September.

## FAMILY 124. AMBROSIACEAE Reichenb.

Herbs with greenish flowers in involucrate heads, the staminate and pistillate flowers in the same or in different heads. Receptacle chaffy. Pistillate flowers with no corolla or a very small one and a small calyx, its limb entire or slightly toothed, adnate to the summit of the 1-celled, 1-ovuled ovary. Staminate flowers with a 4–5-lobed corolla. Stamens five, the anthers nearly separate.

| | |
|---|---|
| Both kinds of flowers in the same head. | 1. IVA. |
| Flowers in different heads. | |
| Involucre of pistillate flowers not prickly. | 2. AMBROSIA. |
| Involucre of pistillate flowers very prickly. | 3. XANTHIUM. |

### 1. IVA L. MARSH ELDER.

Herbs with mostly opposite leaves and greenish-white flowers in small nodding heads. Involucral bracts few, roundish. Marginal flowers perfect, fertile. Disk flowers perfect, sterile.

| | |
|---|---|
| Heads in axils of bracts. | 1. *I. ciliata.* |
| Heads not bracted at base. | 2. *I. xanthiifolia.* |

**1. I. ciliata** Willd. Annual, rough-pubescent, 1°–4° high: leaves ovate, petioled, dentate: bracts ciliate. Strongly resembles *Ambrosia trifida*.—Low prairies. Very abundant locally near Atherton, Lake City, Buckner and Levasy. Adventized at Kansas City. August–October.

**2. I. xanthiifolia** (Fresen.) Nutt. Annual, 2°–6° high, soft-pubescent: leaves ovate-dentate, long-petioled, pale beneath, canescent: inflorescence paniculate-spicate.—Adventized in waste places at Kansas City and Courtney. August–October.

## 2. AMBROSIA L.

Herbs with alternate or opposite more or less lobed leaves. Staminate heads numerous in spike-like racemes, the involucre 5–12-lobed and containing from 5–20 flowers. Fertile involucres few, at the base of the sterile, 1-flowered, tuberculate near the top.

| | |
|---|---|
| Sterile heads sessile. | 1. *A. bidentata.* |
| Sterile heads short-pedicelled. | |
| Leaves entire or 3–5-lobed. | 2. *A. trifida.* |
| Leaves pinnately divided. | |
| Annual. | 3. *A. artemisiaefolia.* |
| Perennial. | 4. *A. psilostachya.* |

**1. A. bidentata** Michx. SOUTHERN RAGWEED. Annual, 1°–3° high, hirsute: leaves lanceolate, sessile, alternate, with two lobes near the base: one of the lobes of the staminate involucre extended into a long appendage. –Sparingly introduced south of the Union Depot in Kansas City and at Sheffield. July–October.

**2. A. trifida** L. HORSEWEED. Annual, rough-hairy, 2°–20° high: leaves opposite, short-petioled, 3-lobed, serrate.—A very common weed. The form with undivided leaves is not uncommon. July–October.

**3. A. artemisiaefolia** L. RAGWEED. HOGWEED. Annual, 1°–5° high, pubescent: leaves thin: pistillate involucre with 4–6 spines.—Our most abundant weed. July–October.

**4. A. psilostachya** DC. WESTERN RAGWEED. Perennial, 1°–3° high, grayish-pubescent and rough: leaves thick: pistillate involucre with very small spines or spineless.—Rather common in dry grounds throughout. July–October.

## 3. XANTHIUM L. COCKLE-BUR.

Annuals with alternate, petioled, cordate-ovate, dentate, 3-nerved and lobed leaves. Staminate heads in short racemes. Pistillate heads axillary, 2-celled, 2-flowered, the involucre covered with hooked spines, 2-beaked.

| | |
|---|---|
| Spines of fruit 3″ long or less. | |
| Fruit 6″–9″ long. | 1. *X. Strumarium.* |
| Fruit 8″–12″ long. | 2. *X. Canadense.* |
| Spines of fruit 5″ long. | 3. *X. speciosum.* |

**1. X. Strumarium** L. Fruit 6″–9″ long, contracted at base, slender, puberulent: spines loosely disposed, 1″–2½″ long, exceeded by the nearly straight spreading beaks.—Occasional in waste places. August–October.

**2. X. Canadense** Mill. Fruit 8″–12″ long, rounded at base, subglabrate to hairy: spines thickly disposed, 1½″–3″ long, usually exceeded by the stout incurved beaks.—Common in waste places. August–October.

Var. **echinatum** Gray. Fruit strongly hispid.—Frequent with the type.

**3. X. speciosum** Kearney. Fruit 10″–12″ long, hairy: spines slender, thickly disposed, 3″–5″ long, often exceeding the slender nearly straight beaks.—Bottoms near Courtney. August–October.

## Family 125. **COMPOSITAE** Adans.

Herbs with non-stipulate leaves. Flowers on a common receptacle, subtended by an involucre and forming heads. Receptacle naked, chaffy or pitted. Calyx tube united with the ovary, its limb obsolete or consisting of bristles, scales, etc. Corolla tubular, 5-cleft, that of the marginal flowers often expanding into a ray. Stamens five, their anthers syngenesious. Ovary 1-celled, inferior, containing a single erect ovule. Style 2-cleft.

Flowers all tubular.
  Receptacle not chaffy or bristly. I.
  Receptacle chaffy or bristly II.
Some flowers with rays.
  Receptacle not chaffy or bristly.
    Flowers yellow. III.
    Flowers not yellow. IV.
  Receptacle chaffy or bristly.
    Flowers yellow. V.
    Flowers not yellow. VI.

I.

Involucral bracts in several series.
  Flowers white or purplish.
    Flowers all perfect ; bracts not scarious.
      Heads subtended by sessile bracts. 2. Elephantopus.
      Heads not subtended by sessile bracts.
        Achenes 5 angled, not ribbed. 3. Eupatorium.
        Achenes 8–10-ribbed.
          Pappus double, outer shorter than the inner. 1. Vernonia.
          Pappus single.
            Flowers white. 4. Kuhnia
            Flowers rose purple. 5. Lacinaria.
    Flowers not all perfect ; bracts scarious.
      Plant dioecious. 15. Antennaria.
      Plant not dioecious. 16. Gnaphalium.
  Flowers yellowish.
    Involucral bracts not glutinous.
      Heads corymbose. 40. Tanacetum.
      Heads paniculate or spicate-paniculate. 41. Artemisia.
    Involucral bracts strongly glutinous. 7. Grindelia.
Involucral bracts in one series.
  Vile-smelling plants. 42. Erechtites.
  Plants without a perceptible odor. 43. Mesadenia.

II.

Pappus of 2–6 teeth or awns.
  Inner involucral bracts separate. 30. Bidens.
  Inner involucral bracts united to middle. 31. Thelesperma.
Pappus of few–many bristles.
  Plants prickly. 46. Carduus.
  Plants not prickly.
    Involucre covered with hooked bristles. 45. arctium.
    Involucre not covered with bristles. 47. Centaurea.

III.

| | |
|---|---|
| Involucre dotted with oil glands. | 36. BOEBERA. |
| Involucre not dotted with oil glands. | |
| Pappus none. | 33. FLAVERIA. |
| Pappus of 5-8 scales. | 34. HELENIUM. |
| Pappus of 2–3 awns. | 7. GRINDELIA. |
| Pappus a short crown. | 40. TANACETUM. |
| Pappus of disk flowers of capillary bristles. | |
| Bracts in a single series. | 44. SENECIO. |
| Bracts strongly imbricated. | |
| Heads 1′ or more broad. | |
| Leaves spinulosely serrate. | 8. PRIONOPSIS. |
| Leaves not spinulosely serrate. | 17. INULA. |
| Heads 6″ or less broad. | |
| Pappus of 5–8 bristle-like chaff. | 6. AMPHIACHYRIS. |
| Pappus of numerous capillary bristles. | |
| Disk flowers more numerous than ray flowers. | 9. SOLIDAGO. |
| Ray flowers more numerous than disk flowers. | 10. EUTHAMIA. |

IV.

| | |
|---|---|
| Pappus none. | 39. CHRYSANTHEMUM. |
| Pappus of 2–4 bristles and short scales. | 11. BOLTONIA. |
| Pappus of numerous capillary bristles. | |
| Rays not the width of the disk. | 14. LEPTILON. |
| Rays longer than the disk. | |
| Involucre imbricated in 1–2 rows. | 13. ERIGERON. |
| Involucre imbricated in 2-several rows. | 12. ASTER. |

V.

| | |
|---|---|
| Disk flowers not ripening seeds. | |
| Achenes wing-margined. | 19. SILPHIUM. |
| Achenes wingless. | 20. ENGELMANNIA. |
| Disk flowers ripening seeds. | |
| Leaves opposite. | |
| Achenes 3–4-sided. | |
| Ray flowers fertile. | 22. HELIOPSIS. |
| Ray flowers not fertile. | 27. HELIANTHUS. |
| Achenes strongly flattened. | |
| Pappus of two small teeth or none. | 29. COREOPSIS. |
| Pappus of 2–6 barbed bristles. | 30. BIDENS. |
| Leaves alternate. | |
| Receptacle conic or columnar. | |
| Achenes 4-angled or terete. | 24. RUDBECKIA. |
| Achenes flat, wing-margined. | 25. RATIBIDA. |
| Receptacle flat to low conic. | |
| Pappus of two small scales or awns. | |
| Achenes not winged. | 27. HELIANTHUS. |
| Achenes winged. | 28. VERBESINA. |
| Pappus of 6–12 scales. | 35. GAILLARDIA. |

VI.

| | |
|---|---|
| Involucral bracts not strongly fimbrillate. | |
| Rays reddish-purple. | 26. BRAUNERIA. |
| Rays white. | |
| Disk flowers not ripening seeds. | |

| | |
|---|---|
| Stem leaves opposite. | 18. POLYMNIA. |
| Leaves alternate. | 21. PARTHENIUM. |
| Disk flowers ripening seeds. | |
| Leaves not pinnatifid. | |
| Pappus none or minute. | 23. ECLIPTA. |
| Pappus of disk flowers of 4–6 fimbriate scales. | 32. GALINSOGA. |
| Leaves pinnatifid. | |
| Heads less than 4″ broad. | 37. ACHILLEA. |
| Heads much more than 4″ broad. | 38. ANTHEMIS. |
| Involucral bracts strongly fimbrillate. | 47. CENTAUREA. |

## 1. VERNONIA Schreb. IRONWEED.

Leaves alternate. Heads cymose-paniculate, many-flowered. Flowers purple.

| | |
|---|---|
| Bracts of involucre with filiform tips. | 1. *V. crinita.* |
| Bracts of involucre not filiform-tipped. | |
| Leaves linear-lanceolate. | 2. *V. fasciculata.* |
| Leaves lanceolate to ovate lanceolate. | |
| Leaves little pubescent beneath. | 3. *V. maxima.* |
| Leaves strongly pubescent beneath. | 4. *V. interior.* |

**1. V. crinita** Raf. 4°–8° high, glabrate to downy: leaves lanceolate, dentate to denticulate: heads 50–70-flowered.—One clump on the prairie near Waldo Park. Probably a waif. July–October.

**2. V. fasciculata** Michx. 3°–7° high, pubescent or glabrate: leaves linear-lanceolate, finely serrate, thick, 3″–8″ broad: heads 20–30-flowered, 2″ broad: scales acute or obtuse, appressed.—Occasional in low grounds throughout, but abundant in the northeastern part. August–October.

**3. V. maxima** Small. 4°–10° high, pubescent or glabrate: leaves lanceolate, sharply serrate, thin, broader than the last: heads like the last, but scales acute to mucronate.—In low grounds especially along the Missouri River. Possibly only a low ground form of the next. July–October.

**4. V. interior** Small. Resembles number 3, but leaves usually densely pubescent beneath: heads 3″ broad: involucral scales appressed.—Abundant in dry grounds throughout. June–October. Our most common species.

Var. **Drummondii** (Shuttlw.) Mackenzie & Bush, n. comb. Heads 4″–6″ broad.—Common in dry grounds especially in the southern part. (*V. Drummondi* Shuttlw.)

Var. **Baldwinii** (Torr.) Mackenzie & Bush, n. comb. Heads 3″ broad: scales of involucre spreading or recurved.—Dry woods at Swope Park. Not common. (*V. Baldwinii* Torr.)

## 2. ELEPHANTOPUS L.

Heads 2–5-flowered, several together forming bracted glomerules. Pappus of a few awn-like bristles.

**1. E. Carolinianus** Willd. ELEPHANT'S FOOT. 1°–2½° high, pubescent: leaves basal and cauline, obovate-spatulate, petioled, crenate.—Locally common in rich woods around Atherton, and along the Missouri River bluffs between Rock and Sugar Creeks.

### 3. EUPATORIUM L. THOROUGHWORT.

Heads cymose-paniculate. Involucre imbricated.

Flowers purplish. 1. *E. maculatum.*
Flowers white.
  Leaves connate-perfoliate. 2. *E. perfoliatum.*
  Leaves petioled.
    Heads 5-flowered. 3. *E. altissimum.*
    Heads 10–many-flowered.
      Involucral scales in 2–3 rows. 4. *E. serotinum.*
      Involucral scales in one row. 5. *E. ageratoides.*

**1. E. maculatum** L. JOE-PYE WEED. 2°–7° high: leaves in whorls of 3–6, petioled, ovate-lanceolate, serrate, pubescent: inflorescence flattish.—Abundant in rich woods. July–September.

**2. E. perfoliatum** L. BONESET. 2°–6° high, hairy: leaves opposite, lanceolate, acuminate, serrate: heads 10–15-flowered.—Common in low grounds throughout the northeastern part and occasional elsewhere. July–September.

**3. E. altissimum** L. 3°–8° high, pubescent: leaves lanceolate, tapering to the base, serrate above, strongly 3-nerved.—Common in sunny grounds. July–September.

**4. E. serotinum** Michx. 3°–7° high, pubescent: leaves ovate-lanceolate, slender-petioled, sharply serrate, 3-nerved.—Local in low grounds near Sheffield, Courtney, Greenwood and Grain Valley. August–September.

**5. E. ageratoides** L. WHITE SNAKEROOT. 1°–3° high, smoothish: leaves ovate, acuminate, slender-petioled, sharply serrate.—A form with strongly tomentose stem is frequent. Abundant in woods. July–October.

### 4. KUHNIA L.

Perennial herbs with alternate resinous-dotted leaves. Pappus plumose. Anthers hardly syngenesious.

**1. K. glutinosa** Ell. FALSE BONESET. 1°–3° high, tomentulose-pubescent: leaves lanceolate, sharply but remotely serrate: heads 6″–8″ high: outer bracts subulate-acuminate: pappus white.—Not uncommon in dry soil throughout, and abundant in the southern part. July–October.

### 5. LACINARIA Hill. BLAZING STAR.

Perennial herbs from tubers, with narrow leaves, and showy spicate-racemose heads. Pappus barbellate to plumose.

Heads 15–16-flowered.
  Involucral bracts acuminate. 1. *L. squarrosa intermedia.*
  Involucral bracts rounded. 2. *L. scariosa.*

Heads 3–6-flowered.

| | |
|---|---|
| Tips of involucral bracts erect. | 3. *L. punctata.* |
| Tips of involucral bracts spreading. | 4. *L. pycnostachya.* |

**1. L. squarrosa intermedia** (Lindl.) Porter. 1°–2½° high, hairy: heads few, 4″–5″ wide: tips of involucral bracts spreading —Locally common on dry hills near Lee's Summit and Dodson, July–September.

**2. L. scariosa** (L.) Hill. 2°–5° high: leaves oblong-ovate to linear-lanceolate: heads numerous: tips of involucral bracts not spreading, purple-margined.—Not uncommon in dry grounds, especially in the southern part. July–September.

**3. L. punctata** (Hook.) Kuntze. 6′–30′ high: heads numerous: involucral bracts cuspidate or acuminate: pappus very plumose.—Native west of Lee's Summit in rocky barrens; found as a waif near Sheffield. July–September.

**4. L. pycnostachya** (Michx.) Kuntze. 2°–5° high: heads numerous: involucral bracts acute: pappus merely barbellate.—Frequent on prairies, especially in the southern part. July–September.

### 6. AMPHIACHYRIS DC.

Glutinous annuals with alternate linear leaves, and numerous heads of small yellow flowers. Pappus of ray flowers nearly obsolete. Ray flowers only perfecting seeds. Achenes hairy.

**1. A. dracunculoides** (DC.) Nutt. YELLOW WEED. 6′–2½° high, much branched.—Abundant in dry soil throughout the southern part. July–October.

### 7. GRINDELIA Willd.

Leaves sessile, alternate, spinulosely dentate. Involucral bracts imbricated, with spreading tips. Receptacle naked.

**1. G. squarrosa** (Pursh) Dunal. GUM PLANT. 1°–3° high, glabrous, glutinous: leaves oblong-spatulate: achenes not toothed.—Occasionally adventized along railroads at Kansas City. August–September.

Var. **nuda** (Wood) A. Gray. Rays wanting.—With the type.

### 8. PRIONOPSIS Nutt.

Differs from *Grindelia* chiefly in the pappus being composed of unequal deciduous bristles. Mature achenes glabrous.

**1. P. ciliata** Nutt. 2°–4° high: leaves ovate, obtuse, spinulosely serrate: involucral bracts glabrous, slightly spreading: heads 12″–15″ broad.—Adventized along railroads at Kansas City; also occurs near Greenwood, where it is possibly native. July–September.

### 9. SOLIDAGO L. GOLDEN ROD.

Perennial herbs with small heads of yellow flowers. Involucre imbricated in several series. Receptacle pitted. Ray flowers pistillate. Disk flowers perfect.

| | |
|---|---|
| Involucral scales with spreading tips. | 1. *S. petiolaris.* |
| Involucral scales appressed. | |
| Heads in axillary clusters. | 2. *S. flexicaulis.* |
| Heads in a terminal corymb. | 3. *S. rigida.* |
| Heads paniculate. | |
| Leaves not strongly 3-nerved. | |
| Panicle branches ascending. | |
| Lower leaves ovate. | 4. *S. speciosa.* |
| Lower leaves lanceolate. | 5. *S. rigidiuscula.* |
| Panicle branches recurved-spreading. | |
| Stems glabrate or sparingly hairy. | 6. *S. ulmifolia.* |
| Stems strongly hairy. | 7. *S. rugosa.* |
| Leaves strongly 3-nerved. | |
| Stems glabrous. | |
| Branches of panicle puberulent. | 8. *S. serotina.* |
| Branches of panicle glabrous. | 9. *S. Missouriensis.* |
| Stems pubescent or scabrous. | |
| Leaves sharply serrate to entire. | 10. *S. Canadensis.* |
| Leaves crenate to entire. | |
| Heads $2\frac{1}{2}''$ high. | 11. *S. nemoralis.* |
| Heads $3''$ high. | 12. *S. longipetiolata.* |

**1. S. petiolaris** Ait. 1°–3° high, pubescent: leaves oblong-lanceolate, short-petioled, sharply serrate: heads 3″–4″ high, in a compound thyrse: rays about ten.—Abundant in a rocky wood, just north of Roanoke, Kansas City. August–September.

**2. S. flexicaulis** L. Stems 1°–3° high, glabrous, zigzag: leaves ovate, petioled, sharply serrate: heads 3″ high: rays 3 or 4.—In rich woods around Sibley. Local. August–September.

**3. S. rigida** L. 2°–5° high, roughish-pubescent: leaves oblong-ovate, thick, serrulate, the lower petioled, the upper sessile: heads 4″–5″ high: rays 6–10.—Not uncommon in dry soil, especially in the southern part. August–September.

**4. S. speciosa** Nutt. 2°–5° high, glabrous: leaves ovate, serrulate, petioled: heads 3″–4″ high, very numerous in a large compound thyrse: rays about five.—Abundant locally in the bluffs east of Dodson; also north of Lee's Summit. Very handsome. September–October.

**5. S. rigidiuscula** (T. & G.) Porter. Like the last but leaves narrower: thyrse narrower and less branching, 1′–3′ wide, 3′–6′ long.—Found on the prairies near Buckner, and as a waif near Dodson. September–October.

**6. S. ulmifolia** Muhl. Stem 1°–4° high, smooth or slightly pubescent: leaves thin, oblong-ovate, often 4′–5′ long, sharply serrate, somewhat rough above, petioled, hairy: heads 2″–3″ high: rays about four.—Abundant in dry woods throughout. August–October.

**7. S. rugosa** Mill. Close to No. 6, but stem strongly pubescent: leaves thick, very rough above, 3′ or less long: panicle branches more numerous.—Dry woods from Courtney to Sibley.

**8. S. serotina** Ait. $1\frac{1}{2}$°–6° high, glabrous: leaves lanceolate, thinnish, sharply serrate, rough-margined, smooth or slightly pubescent be-

neath: heads 2″–3″ high: scales of involucre thin: rays 7–15.—Common in low grounds along the Missouri River. July–September.

**9. S. Missouriensis** Nutt. 1°–3° high, glabrous throughout: leaves linear-lanceolate, thick, entire or strongly serrate: heads 2″–3″ high: scales of involucre thick: rays 6–13.—Not uncommon locally on dry prairies throughout the southern part. July–September.

**10. S. Canadensis** L. 3°–6° high, finely pubescent: leaves lanceolate, sharply serrate, roughish above, pubescent beneath: rays 9–15.—Very common in dry grounds throughout. August–September.

Var. **scabriuscula** Porter. Leaves very rugose beneath, somewhat shorter than the type.—Frequent along the Missouri River bluffs, especially around Courtney.

Var. **procera** (Ait.) T. & G. Leaves cinereous pubescent, especially beneath.—Common on a rocky hill near Pixleys.

**11. S. nemoralis** Ait. 1°–3° high, grayish-pubescent: leaves oblanceolate to oblong-spatulate, crenate-toothed, more or less roughish, and appressed grayish-pubescent: inflorescence usually not one-sided: rays 7–10, less than 1″ long.—Not uncommon in dry grounds, especially in the southern part. Very variable. August–September.

**12. S. longipetiolata** Mackenzie & Bush, n. sp. 10′–24′ high, canescent, green: lower leaves linear oblanceolate, long petioled, short crenate to entire, appressed-pubescent on both sides: inflorescence strongly one-sided: rays 3–10, over 1½″ long.—Frequent in dry ground throughout the southwestern part. August–October.

### 10. EUTHAMIA Nutt.

Perennial herbs with linear to linear-lanceolate leaves. Heads numerous in a flat-topped cyme. Involucre imbricated. Receptacle fimbrillate. Ray flowers pistillate. Disk flowers perfect.

**1. E. graminifolia** (L.) Nutt. GOLDEN ROD. 2°–4° high, nearly glabrous: leaves 3–5-nerved: rays 12–20.—Frequent on prairies throughout, especially in the southern part. August–September.

### 11. BOLTONIA L'Her.

Perennial herbs with alternate entire leaves. Involucral bracts imbricated. Receptacle naked. Ray flowers pistillate. Disk flowers perfect. Achenes flat, with thickened margins.

**1. B. asteroides** (L.) L'Her. SWAMP ASTER. 4°–8° high, glabrous: leaves lanceolate, sessile: flowers very numerous, white: involucral bracts lanceolate to spatulate, obtuse to mucronate.—Abundant locally in low grounds throughout the northern part. August–October.

### 12. ASTER L.

Perennial herbs with alternate leaves and corymbose or paniculate inflorescences. Ray flowers pistillate. Disk flowers fertile. Receptacle flat. Achenes flattened.

| | |
|---|---|
| Lower leaves cordate, petioled. | |
| Leaves entire. | 1. *A. azureus.* |
| Leaves serrate. | |
| Heads 2″–3″ high. | 2. *A. cordifolius.* |
| Heads 3″–5″ high. | |
| Stems densely finely canescent. | 3. *A. Drummondii.* |
| Stems glabrous or nearly so. | 4. *A. sagittifolius.* |
| Stem leaves cordate-clasping. | |
| Stems rough-hairy. | |
| Plants 3°–8° high. | 5. *A. Novae-Angliae.* |
| Plants 2° or less high. | 6. *A. oblongifolius.* |
| Stems glabrous. | |
| Leaves oblong lanceolate to ovate. | 7. *A. laevis.* |
| Leaves linear-lanceolate. | 8. *A. concinnus.* |
| Stem leaves not cordate or cordate clasping. | |
| Leaves silvery on both sides. | 9. *A. sericeus.* |
| Leaves not silvery. | |
| Stem leaves linear. | |
| Stems rough-pubescent. | 10. *A. exiguus.* |
| Stems glabrous to villous. | |
| Heads 3″–4″ broad. | 11. *A. parviceps.* |
| Heads 4″–6″ broad. | 12. *A. ericoides pilosus.* |
| Stem leaves lanceolate. | |
| Heads not one-sided on the branches. | |
| Stems glabrous or nearly so. | |
| Rays violet. | 13. *A. salicifolius.* |
| Rays white. | |
| Rays 3″–4″ long. | 14. *A. paniculatus.* |
| Rays 2″–3″ long. | 15. *A. Tradescanti.* |
| Stems finely canescent. | 16. *A. Missouriensis.* |
| Heads strongly one-sided on the branches. | 17. *A. lateriflorus.* |

**1. A. azureus** Lindl. 1°–3° high, rough or smooth : lower leaves ovate-cordate to lanceolate, rough, the upper linear to lanceolate : involucral scales strongly green-tipped : rays 10–26, bright blue.—Not uncommon in dry places throughout the southern part. September–October.

**2. A. cordifolius** L. 1°–4° high : lower leaves ovate-cordate, the upper ovate to lanceolate : heads 2″–3″ high : bracts obtusish to acute : rays 10–20, bluish. This and the next two species freely intergrade with us. —Abundant in woods. September–October.

**3. A. Drummondii** Lindl. Distinguished from the last chiefly by being finely and densely canescent all over and having heads 3″–5″ high : bracts more acute.—Frequent in dry woods, especially in the southern part. September–October.

**4. A. sagittifolius** Willd. Like *A. Drummondii*, but whole plant nearly glabrous and involucral scales looser.—Dry oak woods near Dodson. September–October.

**5. A. Novae-Angliae** L. Stems hairy : leaves lanceolate, entire, pubescent : involucral scales spreading, glandular-viscid : rays 40–50, violet-purple, 6″ long.—In moist grounds throughout, but uncommon. August–October.

**6. A. oblongifolius** Nutt. Stems glandular-puberulent : leaves ob-

long, entire, hispidulous, rough-margined: involucral scales appressed or spreading: rays 20–30, violet-purple, 4″ long.—Often common in barrens in the southern part. September–October.

**7. A. laevis** L. 2°–3° high: leaves entire or serrate, rough-margined: involucral scales close, green-tipped: heads 1′ broad: rays 15–30, blue.—Frequent in dry grounds throughout the southern part. September–October.

**8. A. concinnus** Willd. Closely resembles the last but the plant is taller and the leaves elongated linear-lanceolate.—Dry woods, especially around Dodson. September–October.

**9. A. sericeus** Vent. 1°–2° high, glabrous: leaves oblong-lanceolate, sessile, entire: involucral scales loose, spreading, canescent: heads 18″ broad: rays violet-blue.—Rarely found on rocky prairies near Lee's Summit. August–October.

**10. A. exiguus** (Fernald) Rydb. 1°–2° high, much branched: leaves rigid, sessile, rough and ciliate-margined: heads very numerous, 3″–4″ broad: involucral tips spreading: rays white, 10–20.—Often abundant in dry soil. August–October.

**11. A. parviceps** (Burgess) Mackenzie & Bush, n. comb. 1°–3° high, glabrous, bushy-branched: leaves short-linear, acute, entire, rough, with short very few-flowered branches in their axils: leaves of branches scale-like: heads small, numerous, not crowded: rays 10–20, white, 1″–2″ long.—Common on a low prairie one mile south of Dodson; also at Lake City and Courtney. September–October. (*A. ericoides parviceps* Burgess.)

**12. A. ericoides pilosus** (Willd.) Porter. 1°–3° high, hairy: basal leaves spatulate: stem leaves linear: inflorescence paniculate: heads 6″ wide: rays 15–20, white, 3″ long: involucral scales conspicuously green-tipped.—Dry woods west of Lee's Summit. September–October.

**13. A. salicifolius** Lam. 2°–6° high: leaves lanceolate, rough, sessile, thickish, sharply serrate: heads numerous, paniculed, 8″–12″ broad: rays numerous, 3″–4″ long, violet, rarely white.—Common in open woods throughout. August–October.

Var. **subasper** (Lindl.) A. Gray. Stems and leaves scabrous: inflorescence more contracted.—In similar situations, but less common.

**14. A. paniculatus** Lam. 2°–8° high: leaves lanceolate, rough-margined, sessile, sharply serrate: heads as in the last, but rays white.—Very abundant in low grounds. August–October.

**15. A. Tradescanti** L. Closely resembles *A. paniculatus*, but heads only 5″–8″ broad, and rays 2″–3″ long.—In moist grounds near Sheffield and Grain Valley. Common locally. August–October.

**16. A. Missouriensis** Britton. 1°–3° high, puberulent: leaves spatulate to oblanceolate, sharply serrate above the middle, or entire, tapering to a winged petiole at base or sessile: heads 4″–7″ broad, terminating short leafy branches or paniculed: rays white, 1½″–2½″ long. — Very

abundant in low woods, especially along the Missouri River. September–October.

**17. A. lateriflorus** (L.) Britton. 1°–3° high, glabrate: branches puberulent: leaves lanceolate to oblanceolate, 3′ long, sparingly serrate, sessile or nearly so: heads 3″–4″ broad, one-sided on the branches of a large panicle: rays white, 1″–1½″ long.—Bluff woods near Sibley. September–October.

### 12. ERIGERON L. Fleabane.

Ours are herbs with corymbose-paniculate, long-peduncled heads of flowers. Leaves alternate. Involucral scales subequal, in one or two series. Ray flowers pistillate. Disk flowers fertile. Achenes flattened, 2-nerved.

| | |
|---|---|
| Stem leaves clasping, thin. | 1. *E. Philadelphicus.* |
| Stem leaves not clasping. | |
| Leaves ovate-lanceolate, toothed. | 2. *E. annuus.* |
| Leaves linear-lanceolate, entire. | 3. *E. ramosus.* |

**1. E. Philadelphicus** L. Perennial, 1°–2° high, hairy: leaves spatulate to obovate, toothed: heads not numerous: rays 100–150, light rose-purple: pappus simple.—Rather common in moist woods. May–June.

**2. E. annuus** (L.) Pers. Annual, 1°–4° high, closely pubescent: heads numerous: rays 40–70, white: pappus double.—Very abundant in fields. May–August.

**3. E. ramosus** (Walt.) B.S.P. Resembles the last, but pubescence more appressed and leaves narrower and usually entire.—Abundant in dry fields. May–August.

### 14. LEPTILON Raf.

Annual herbs with alternate leaves. Involucre in 1–2 series. Ray flowers pistillate. Disk flowers fertile. Achenes flattened. Pappus simple.

| | |
|---|---|
| Plants tall and erect. | 1. *L. Canadense.* |
| Plants diffusely spreading. | 2. *L. divaricatum.* |

**1. L. Canadense** (L.) Britton. Horse Weed. 1°–8° high, pubescent: lower leaves spatulate, sparingly toothed, the upper linear, entire: heads numerous, panicled, small: rays whitish.—A very common weed. June–October.

**2. L. divaricatum** (Michx.) Raf. Low Horse Weed. 3′–12′ high, strigose-pubescent: leaves linear to awl-shaped: heads corymbose: rays purplish-white.—Occurs locally in sandy fields throughout the county. June–October.

### 15. ANTENNARIA Gaertn. Everlasting. Indian Tobacco.

Woolly perennial herbs with clustered, basal leaves and alternate cauline leaves, and capitate or corymbose dioecious heads of flowers. Involucral bracts imbricated, scarious margined.

| | |
|---|---|
| Mature basal leaves 9″–24″ wide. | 1. *A. occidentalis.* |
| Mature basal leaves 3″–6″ wide. | 2. *A. campestris.* |

**1. A. occidentalis** Greene. Basal leaves ovate, 1½′–2′ long, 9″–15″ wide, tapering into a petiole, 1′ long, strongly 3–5-nerved : stems 9′–12′ high : heads corymbose.—Common in dry woods. April–May.

**2. A. campestris** Rydb. Basal leaves oblanceolate to obovate, thick, 3″ wide, tapering at the base, not distinctly petioled, usually one-nerved, 1′ long : stems 3′–12′ high.—In dry grounds throughout. Rather common. April–May.

### 16. GNAPHALIUM L. Everlasting.

Woolly herbs with alternate leaves. Involucral bracts imbricated, scarious. Outer flowers pistillate. Central flowers perfect.

| | |
|---|---|
| Heads corymbose. | 1. *G. obtusifolium.* |
| Heads spicate. | 2. *G. purpureum.* |

**1. G. obtusifolium** L. Annual, erect, 1°–3° high : leaves sessile, lanceolate, undulate : pappus bristles distinct.—In dry woods throughout, but rather rare. July–October.

**2. G. purpureum** L. Annual, erect, 6′–20′ high : leaves spatulate : pappus bristles united below.—In dry fields near Courtney and Grain Valley. Rare. May–July.

### 17. INULA L.

Coarse herbs. Involucre imbricated. Ray flowers pistillate. Disk flowers perfect. Achenes 4–5-ribbed.

**1. I. Helenium** L. Elecampane. Perennial, 3°–6° high : leaves ovate-oblong, downy beneath, denticulate : heads 2′–4′ broad.—Common locally along Spring Branch east of Independence ; also near Courtney. July–September.

### 18. POLYMNIA L.

Perennial herbs with opposite leaves and corymbose flowers. Involucral bracts in two series, the outer consisting of five large bracts, the inner of numerous small ones, subtending the achenes. Pappus none.

**1. P. Canadensis radiata** A. Gray. Leaf Cup. 2°–5° high, viscid-pubescent : leaves deltoid-ovate, denticulate, pinnatifid : rays five, white, 3″ long, 3-lobed.—Common in rich rocky woods along the Missouri River bluffs at Kansas City. June–September.

### 19. SILPHIUM L.

Stout perennial herbs with corymbose-paniculate flowers. Involucral bracts imbricated. Ray flowers in 2–3 series. Achenes flat, 2-winged, without pappus, or with two teeth confluent with the winged margins.

| | |
|---|---|
| Leaves opposite. | |
| Leaves strongly connate-perfoliate. | 1. *S. perfoliatum.* |
| Leaves sessile merely. | 2. *S. integrifolium.* |
| Leaves alternate. | 3. *S. laciniatum.* |

**1. S. perfoliatum** L. CUP PLANT. Stems 4°–8° high, square: leaves ovate-cordate, coarsely toothed, scabrous: heads 2′–3′ wide.—Common in moist grounds. June–September.

**2. S. integrifolium** Michx. ROSIN WEED. Stems almost terete, 2°–5° high: leaves ovate-lanceolate, denticulate, rough or smooth: heads 1′–2′ broad.—Common in dry grounds, mostly in the southern part. June–September.

**3. S. laciniatum** L. COMPASS PLANT. Stems terete, 3°–12° high, rough-bristly: leaves largely basal, oblong-ovate in outline, pinnately parted: heads 2′–4′ broad.—Common on prairies, mostly in the southern part. June–September.

### 20. ENGELMANNIA T. & G.

Perennial herbs with alternate leaves and paniculate heads of flowers. Outer involucral bracts about ten, linear, loose, the inner oval, appressed. Rays 8–10. Achenes obovate. Pappus a short crown.

**1. E. pinnatifida** T. & G. 1°–2° high, hirsute: leaves oblong in outline, pinnatifid.—Has been found as a waif at Sheffield. June.

### 21. PARTHENIUM L.

Perennial herbs with alternate leaves and corymbose flowers. Involucral bracts in 2–3 series, short, obtuse. Receptacle convex. Ray flowers five, their ligules short. Achenes compressed, margined. Pappus of 2–3 scales.

**1. P. integrifolium** L. PRAIRIE DOCK. 1°–3° high, from thick root-stocks, minutely pubescent to glabrous: leaves oval-oblong, crenately toothed, rough: heads numerous.—Very rare in dry woods west of Lee's Summit and south of Raytown. July–September.

### 22. HELIOPSIS Pers.

Perennial herbs. Involucral scales in two or three rows, spreading. Pappus none or a few teeth. Ray achenes three-sided. Disk achenes four-sided.

**1. H. scabra** Dunal. FALSE SUNFLOWER. 2°–4° high, roughish: leaves ovate, petioled, sharply serrate: heads 2′ broad.—Frequent in dry grounds, especially in the southern part. June–September.

### 23. ECLIPTA L.

Diffusely spreading herbs. Leaves opposite. Involucral scales in two series. Achenes of ray-flowers 3-sided, those in the disk compressed.

**1. E. alba** (L.) Hassk. MUD WEED. Annual, roughish: leaves oblong-lanceolate, sessile, serrate: heads short-peduncled, 3″–6″ broad.—Common in wet places along streams. July–October.

### 24. RUDBECKIA L. CONE-FLOWER.

Involucral scales in two rows, spreading. Achenes four-angled or terete. Pappus none, or a crown-like border, or of few small teeth.

| | |
|---|---|
| Stems hairy. | |
| Leaves 3 lobed or parted. | |
| Rays 8–12. | 1. *R. triloba.* |
| Rays 15–20. | 2. *R. subtomentosa.* |
| Leaves not 3-lobed or parted. | 3. *R. hirta.* |
| Stems smooth or nearly so. | |
| Leaves pinnatifid. | 4. *R. laciniata.* |
| Leaves cordate-clasping at base. | 5. *R. amplexicaulis.* |
| Leaves oval, petioled. | 6. *R. grandiflora.* |

**1. R. triloba** L. Much branched, 2°–5° high : heads 1′ broad : chaff awn-pointed, smooth.—Abundant in rich woods. July–September.

**2. R. subtomentosa** Pursh. 2°–6° high : upper leaves ovate-lanceolate, serrate : heads 2′–3′ broad, sweet-scented : chaff blunt, pubescent at apex.—Rather common on prairies in the southern part July–September.

**3. R. hirta** L. NIGGER-HEAD. 1°–3° high : leaves oblong or lanceolate, usually nearly entire : involucral bracts large, spreading : heads 2′–3′ broad : chaff acutish, hirsute at apex.—Possibly native in the southern part, but commonly adventized in fields. June–September.

**4. R. laciniata** L. 2°–10° high : leaves slightly roughish : disk greenish : heads 2′–4′ broad : rays 6–10, drooping : chaff truncate, downy at apex.—Common in low woods. July–October.

**5. R. amplexicaulis** Vahl. 1°–2½° high, almost glabrous : leaves ovate-oblong, slightly toothed : heads 1½′–2′ broad : rays few, brownish at base.—Occurs sparingly as a waif in waste places in Kansas City. June–July.

**6. R. grandiflora** C. C. Gmel. 2°–3° high : leaves nearly entire : heads 2′–3′ broad : rays 10–15, soon drooping.—Occurs sparingly as a waif along railroads east of Sheffield. July.

### 25. RATIBIDA Raf. CONE-FLOWER.

Perennial, pinnately-leaved herbs. Rays drooping, 4–10. Chaff truncate, canescent at apex. Pappus none or of one or two teeth.

| | |
|---|---|
| Disk as thick as long. | 1. *R. pinnata.* |
| Disk much longer than thick. | 2. *R. columnaris.* |

**1. R. pinnata** (Vent.) Barnhart. 2°–6° high, appressed-hoary : leaf-divisions 3–7, lanceolate : rays 1½′ long, drooping.—Common on dry rocky hills, especially in the southern part. June–September.

**2. R. columnaris** (Sims) D. Don. 1°–3° high, strigose-pubescent : leaf-divisions 4–9, linear : rays ¾′ long, drooping.—Not infrequently adventized along railroads, especially at Sheffield and Westport. June–September.

### 26. BRAUNERIA Neck. PURPLE CONE-FLOWER.

Involucral bracts imbricated. Receptacle conical. Rays drooping. Chaff spiny-tipped, longer than the disk-flowers. Ray flowers neutral. Disk-flowers perfect. Achenes quadrangular. Pappus a short crown.

| | |
|---|---|
| Leaves ovate, dentate. | 1. *B. purpurea.* |
| Leaves lanceolate, entire. | 2. *B. pallida.* |

**1. B. purpurea** (L.) Britton. 2°–5° high, somewhat rough : leaves 5-nerved, rounded at base, rough : rays rich crimson, 12″–20″ long.—In dry woods near Grain Valley. Rare and local. June–September.

**2. B. pallida** (Nutt.) Britton. 2°–3° high, rough-hispid : leaves 3-nerved, attenuate at base, rough : rays pale crimson, 15″–24″ long.—On dry prairies throughout the southern part. Often abundant. May–July.

### 27. HELIANTHUS L. Sun-flower.

Stout herbs with long-peduncled heads of yellow flowers. Involucral bracts in several rows. Ray flowers neutral. Disk flowers fertile. Pappus of two deciduous awns.

| | |
|---|---|
| Leaves long-linear or filiform. | 1. *H. orgyalis.* |
| Leaves prevailingly lanceolate. | |
| Stems hispid. | 2. *H. Maximiliani.* |
| Stems glabrous. | 3. *H. grosse-serratus.* |
| Leaves prevailingly ovate to ovate-lanceolate. | |
| Leaves mostly opposite. | |
| Leaves cordate-clasping at base. | 4. *H. mollis.* |
| Leaves petioled. | |
| Leaves tapering at base. | 5. *H. scaberrimus.* |
| Leaves rounded at base. | 6. *H. hirsutus.* |
| Leaves mostly alternate. | |
| Annuals. | |
| Involucral bracts lanceolate. | 7. *H. petiolaris.* |
| Involucral bracts ovate. | 8. *H. annuus.* |
| Perennial. | 9. *H. tuberosus.* |

**1. H. orgyalis** DC. 2°–10° high, glabrous and glaucous, very leafy : heads numerous, 1½′ broad : involucral scales loose and spreading.—Very abundant locally on high prairies and open hillsides from Dodson (rare) to Hickman's Mills and southwestward. August–September.

**2. H. Maximiliani** Schrad. 3°–12° high : leaves nearly entire, almost sessile : involucral scales loose, strigose-pubescent.—Frequently adventized along railroads, especially at Kansas City. July–September.

**3. H. grosse-serratus** Martens. 2°–15° high : leaves slender-petioled, serrate, rough above, more or less canescent beneath : involucral scales loose, ciliate.—Common, especially along prairie rills in the southern part. July–October.

**4. H. mollis** Lam. 2°–5° high, densely hispid : leaves serrulate, scabrous above, finely pubescent beneath : involucral scales loose, soft-pubescent.—Occurs locally in barrens near Lee's Summit and Dodson ; also occasionally adventized in waste places. July–October.

**5. H scaberrimus** Ell. 1°–4° high, scabrous : leaves petioled, serrate, thick, rough on both sides : involucral scales appressed.—Common on dry prairies in the southern part ; also occasionally adventized along railroads. August–September.

**6. H. hirsutus** Raf. 1°–6° high, bristly-hirsute to nearly glabrous: leaves very variable in size, entire or serrate, very rough above, rough-pubescent beneath: involucral scales loose, ciliate.—Dry woods throughout. Very abundant in the southern part. July–September.

**7. H. petiolaris** Nutt. 1°–6° high, strigose-hispid: leaves ovate-lanceolate, entire or denticulate, rough: involucral scales lanceolate, canescent.—Frequently introduced along railroads and in waste places. Apparently native along the Missouri River. July–October.

**8. H. annuus** L. 2°–15° high, scabrous: leaves broadly ovate, serrate, rough: heads 3′–12′ broad: involucral scales ciliate.—In waste places, especially abundant around Kansas City. July–October.

**9. H. tuberosus** L. 4°–12° high, hirsute: leaves ovate-oblong, serrate, petioled, rough above, pubescent beneath.—In low grounds throughout, running into but much less common than

Var. **subcanescens** A. Gray. Leaves white-canescent beneath.—Abundant in low grounds. July–October.

### 28. VERBESINA L. Crown Beard.

Involucral bracts imbricated in a few series. Ray flowers pistillate or neutral. Disk flowers perfect. Leaves decurrent.

| | |
|---|---|
| Stems 1°–2° high, whitish-canescent. | 1. *V. encelioides.* |
| Stems 3°–8° high, not whitish-canescent. | |
| Leaves densely hairy beneath. | 2. *V. helianthoides.* |
| Leaves slightly appressed-pubescent beneath. | 3. *V. alternifolia.* |

**1. V. encelioides** (Cav.) A. Gray. Annual: leaves ovate-lanceolate petioled: heads 1′ broad: involucral scales canescent, erect.—Found as a waif along roads northeast of Independence and at Courtney. May–June.

**2. V. helianthoides** Michx. Perennial: leaves ovate, sessile, serrate: stem strongly winged: heads 2′–3′ broad: involucral scales rough, erect.—Occurs locally in dry woods near Tarnsey, Lee's Summit and Westport. June–September.

**3. V. alternifolia** (L.) Britton. Perennial: leaves lanceolate, short-petioled, serrate: stem winged: heads 12″–20″ broad: disk globose: involucral scales much shorter than the flowers, soon deflexed.—Common in rich woods.

### 29. COREOPSIS L. Tickseed.

Involucral bracts in two series, the outer spreading, the inner broader and appressed. Ray flowers neutral. Disk flowers perfect.

| | |
|---|---|
| Rays entire. | 1. *C. tripteris.* |
| Rays 3–5-toothed. | |
| Leaves 3-lobed. | 2. *C. palmata.* |
| Leaves pinnately parted. | |
| Rays pure yellow. | 3. *C. grandiflora.* |
| Rays brownish at base. | 4. *C. tinctoria.* |

**1. C. tripteris** L. Glabrous perennial, 4°–8° high: leaves petioled, pinnately divided into 3–5 lanceolate entire leaflets: pappus none.—Not

uncommon on dry hills, especially in the southwestern part. July–September.

**2. C. palmata** Nutt. Glabrous perennial, 1°–3° high : leaves 3-lobed to below the middle, wedge-shaped at base, sessile : pappus none or of two small teeth.—Frequent on prairies and in dry woods throughout the southern part. May–July.

**3. C. grandiflora** Hogg. Glabrous perennial, 1°–3° high : leaf divisions oblong or linear, entire : pappus of two small teeth : achene with two prominent calluses on the inner side.—Adventized around Sheffield and near Courtney, Atherton and Glendale. May–July.

**4. C. tinctoria** Nutt. Glabrous annual, 1°–3° high : leaf divisions linear, entire : pappus of a small border or none.—Locally adventized at Sheffield, Independence and Courtney. June–August.

### 30. BIDENS L.

Involucral bracts in two series, the outer usually large and foliaceous, the inner erect. Ray flowers neutral. Disk flowers perfect. Our species are annuals.

| | |
|---|---|
| Rays large and conspicuous. | |
| Leaves pinnately divided. | 1. *B. involucrata.* |
| Leaves lanceolate, serrate. | 2. *B. cernua.* |
| Rays very small or none. | |
| Leaves not pinnately divided. | |
| Stems purple. | 3. *B. connata.* |
| Stems straw-colored. | 4. *B. acuta.* |
| Leaves pinnately divided. | |
| Achenes oval or obovate. | |
| Outer involucral bracts 12–14. | 5. *B. vulgata.* |
| Outer involucral bracts 8–11. | 6. *B. frondosa.* |
| Achenes long-linear. | 7. *B. bipinnata.* |

**1. B. involucrata** (Nutt.) Britton. TICKSEED SUNFLOWER. 1°–3° high, somewhat pubescent : leaf-divisions linear-lanceolate, serrate : outer involucral scales exceeding the inner : achene with two short (1″ long) teeth.—Very abundant and conspicuous in low grounds. July–October.

**2. B. cernua** L. BUR-MARIGOLD. 6′–30′ high, nearly glabrous : leaves somewhat connate-perfoliate : heads soon nodding : achenes with usually four downwardly barbed awns.—Common along the Missouri River. June–November.

**3. B. connata** Muhl. BEGGAR'S-TICKS. 6′–6° high, glabrous : leaves oblong-lanceolate, serrate, more or less petioled : petioles slightly united at base : flowers orange : outer involucral bracts somewhat exceeding the inner : achenes bearing 2–4 downwardly barbed awns.—Rather common in moist places. June–November.

**4. B. acuta** (Wiegand) Britton. BEGGAR'S-TICKS. Resembles the last : flowers greenish-yellow : outer involucral bracts leaf-like, 2–4 times the length of the inner.—Common in moist places. June–November. *B. comosa* (Gray) Wiegand, probably also occurs.

5. **B. vulgata** Greene. BEGGAR'S-TICKS. 1°–5° high, more or less pubescent: leaves usually 3-foliolate: leaflets thin, oblong lanceolate, serrate, not stalked: heads long peduncled: achenes thin, oval-oblong, yellowish brown, 2-awned.—Common in woods, waste places, etc. July–November.

Var. **puberula** (Wiegand) Greene. Leaves densely pubescent.—Frequent, especially in wet places.

6. **B. frondosa** L. Resembles the last, but leaflets strongly stalked: heads corymbose: achenes oblong, thick, black, 2-awned.—Common in low grounds. July–November.

7. **B. bipinnata** L. SPANISH NEEDLES. 1°–3° high, smoothish: leaf-segments toothed, numerous: achenes quadrangular, 4-awned, much exceeding the involucre.—Common in moist grounds. June–October.

### 31. THELESPERMA Less.

Leaves dissected. Heads long-peduncled. Outer involucral scales small, spreading. Achenes oblong-linear, terete, wingless.

1. **T. gracile** (Torr.) Gray. Perennial, 1°–3° high, glabrous: achenes bearing two retrorsely-hispid short awns.—Found as a waif near Kansas City and Atherton.—June–August.

### 32. GALINSOGA R. & P.

Leaves opposite. Flowers axillary, peduncled. Involucre imbricated in two series. Achenes angled.

1. **G. parviflora** Cav. Spreading appressed-pubescent annual: leaves ovate, more or less petioled, serrate: heads 2″–3″ broad.—Locally adventized in waste places in Independence. July–October.

### 33. FLAVERIA Juss.

Leaves opposite, sessile. Heads cymose-capitate, few-flowered. Involucre of 2–5 small bracts. Ray usually one, fertile. Achenes linear-oblong, ribbed.

1. **F. angustifolia** (Cav.) Pers. Glabrous annual, 1°–3° high: leaves lanceolate, serrate.—Has been found as a waif near Courtney, and also near Argentine, Kansas. August–October.

### 34. HELENIUM L. SNEEZEWEED.

Leaves alternate. Heads corymbose. Involucral bracts small, in about one series. Disk globular. Rays several, 3–5-lobed, fertile.

| | |
|---|---|
| Leaves oblong-lanceolate, serrate. | 1. *H. autumnale.* |
| Leaves long-linear, entire. | 2. *H. tenuifolium.* |

1. **H. autumnale** L. Perennial, puberulent, 1°–4° high: heads about 1½′ broad.—Locally common in moist ground, Lake City, Dodson, Courtney, Atherton. August–September.

**2. H. tenuifolium** Nutt. Annual, nearly glabrous, 1°–2° high: heads about 1′ broad.—Occasionally occurs as a waif along railroads, Sheffield, Leeds, Adams. August–October.

### 35. GAILLARDIA Foug.

Leaves alternate. Heads long-peduncled. Involucral bracts imbricated in several series. Rays neutral, 3-toothed. Receptacle fimbrillate.

**1. G. pulchella** Foug. Annual, 10′–15′ high: leaves oblong-lanceolate, coarsely dentate, sessile: rays brownish at base, yellow above.—Found as a waif near Atherton. May–September.

### 36. BOEBERA Willd.

Leaves pinnately divided, opposite. Heads small, peduncled. Principal involucral bracts in a single series, united at base. Rays pistillate, short.

**1. D. papposa** (Vent.) Rydb. FETID MARIGOLD. Much branched annual, 3′–24′ high.—Common in dry grounds and waste places. June–October.

### 37. ACHILLEA L.

Perennial herbs with alternate, very finely dissected leaves. Heads corymbose, numerous. Involucral scales imbricated in several series. Ray flowers fertile. Pappus none.

**1. A. Millefolium** L. MILFOIL. YARROW. 1°–4° high, somewhat tomentose: rays 4–5, about 1″ long.—Common in dry grounds. May–September.

### 38. ANTHEMIS L.

Leaves alternate. Heads long-peduncled. Involucral scales imbricated in several series.

Plants strongly ill-scented. 1. *A. Cotula.*
Plants not ill-scented. 2. *A. arvensis.*

**1. A. Cotula** L. DOG-FENNEL. Branching annual, 1°–2° high, appressed-pubescent: rays neutral: pappus none.—A common weed in waste places. May–September.

**2. A. arvensis** L. FIELD CAMOMILE. Resembles the last but pubescent: rays pistillate: pappus a minute border.—Has been found as a waif near Sheffield and Courtney. May–August.

### 39. CHRYSANTHEMUM L.

Leaves alternate. Heads long-peduncled. Involucral scales imbricated in several series. Ray flowers fertile. Pappus none.

**1. C. Leucanthemum** L. OX-EYE DAISY. Glabrate perennial, 1°–3° high: stems leaves oblong, cut-serrate, more or less clasping: heads 1′–2′ broad: rays 20–30.—Locally adventized in waste places and fields near Sheffield, Waldo Park, Lee's Summit, Sibley, Glendale and Courtney.

### 40. TANACETUM L.

Perennials with alternate pinnatifid leaves and corymbose heads. Involucre imbricated. Marginal flowers fertile. Pappus a short crown.

**1. T. vulgare** L. TANSY. Smoothish, 1°–4° high: heads about 4″ broad: marginal flowers with short 3-toothed limbs.—Occasionally escaping from gardens to roadsides. August–September.

### 41. ARTEMISIA L. WORMWOOD.

Alternate-leaved herbs with small paniculate heads of flowers. Involucre imbricated. Pappus none.

| | |
|---|---|
| Leaves glabrous or nearly so on both sides. | |
| Upper leaves linear, entire. | 1. *A. dracunculoides.* |
| Upper leaves pinnately parted. | |
| Plant strongly sweet-scented. | 2. *A. annua.* |
| Plant not sweet-scented. | 3. *A. biennis.* |
| Leaves strongly tomentose on both sides. | |
| Leaves pinnatifid. | 4. *A. Carruthii.* |
| Leaves entire. | 5. *A. gnaphalodes.* |
| Leaves glabrate above; tomentose beneath. | |
| Stem strongly tomentose. | 6. *A. Ludoviciana.* |
| Stem glabrate. | 7. *A. Mexicana.* |

**1. A. dracunculoides** Pursh. Perennial, 1½°–4° high, glabrous: lower leaves somewhat pinnatifid: disk flowers sterile.—Occurs locally in barrens east of Dodson and west and north of Lee's Summit. August–October.

**2. A. annua** L. Annual, 1°–5° high, glabrous: leaves 2-pinnatifid: heads paniculate: flowers all fertile.—Sparingly adventized at Kansas City and Independence. August–November.

**3. A. biennis** Willd. Annual or biennial, 1°–3° high, glabrous: leaves once pinnatifid, the divisions serrate: heads almost spicate: flowers all fertile.—Shore of the Missouri River; rather infrequent. August–November.

**4. A. Carruthii** Wood. 12′–18′ high, much branched, short white-canescent: lower leaves pinnatifid into 5–7 narrowly linear segments: upper leaves linear, entire: flowers all fertile.—Occurs rarely as a waif at Sheffield. September–October. (*A. Kansana* Britton.)

**5. A. gnaphalodes** Nutt. Perennial, 1°–3° high: stems tomentose: upper leaves lanceolate or linear-lanceolate, entire: lower leaves more or less incised but not pinnatifid: flowers all fertile: involucre hardly tomentose-canescent: heads usually not nodding, 1½″ long.—Sandy bottoms along the Missouri River near Courtney and Sibley. Not common. July–October.

**6. A. Ludoviciana** Nutt. Stems 15′–30′ high, stout, densely white-tomentose: leaves as in *A. Mexicana* Willd.: heads often nodding, 2″ long: involucre densely white tomentose-canescent.—Dry barrens and prairies throughout the southern part. September–October.

**7. A. Mexicana** Willd. Resembles the last: stem taller and more slender, nearly glabrous: upper leaves linear, entire, the lower pinnatifid with linear-oblong segments: involucre nearly glabrous: heads usually not nodding, 1½″ long —On barrens and prairies throughout the southern part. July–October. Possibly a form of the last.

### 42. ERECHTITES Raf.

Alternate-leaved, vile-smelling herbs. Heads corymbose. Marginal flowers pistillate. Pappus of copious fine soft hairs.

**1. E. hieracifolia** (L.) Raf. FIREWEED. Annual, usually somewhat hairy, 1°–6° high: leaves lanceolate, clasping, sessile or short-petioled, sinuate-dentate: heads 3″ wide.—Rather common in woods. August–October.

### 43. MESADENIA Raf. INDIAN PLANTAIN.

Leaves alternate, petioled. Flowers corymbose. Heads bracted, 5-angled. Marginal flowers perfect. Receptacle flat with a pointed projection in the center. Pappus of numerous soft bristles.

| | |
|---|---|
| Leaves triangular-reniform. | 1. *M. atriplicifolia.* |
| Leaves ovate-lanceolate. | 2. *M. tuberosa.* |

**1. M. atriplicifolia** (L.) Raf. Stems 3°–6° high, terete: leaves thin, angulately lobed, glaucous beneath, palmately veined.—Rather common in open woods.—July–September.

**2. M. tuberosa** (Nutt.) Britton. Stems 2°–5° high, angled: leaves thick, entire, strongly parallel-nerved, chiefly basal.—Frequent on prairies, save in the northwestern part. June–July.

### 44. SENECIO L.

Alternate-leaved herbs with corymbose heads of flowers. Receptacle flat. Rays fertile.

| | |
|---|---|
| Basal leaves lyrate pinnatifid. | 1. *S. lobatus.* |
| Basal leaves merely crenate. | |
| Basal leaves cordate at base. | 2. *S. aureus.* |
| Basal leaves tapering at base. | 3. *S. Balsamitae.* |

**1. S. lobatus** Pers. BUTTERWEED. Annual, 1°–3° high, glabrous: leaves all pinnatifid: rays 6–12: achenes hispidulous.—Locally common in low woods along the Missouri River. May–June.

**2. S. aureus** L. SQUAW WEED. Perennial, 1°–1½° high, nearly glabrous: basal leaves ovate-cordate: stem leaves pinnatifid: rays 8–12: achenes glabrous.—Low grounds along the Blue and Little Blue Rivers, but uncommon. May–June.

**3. S. Balsamitae** Muhl. SQUAW WEED. Resembles the last, but woolly at base: lower leaves oblong-oval: achenes hispidulous. —Prairies near Lee's Summit. Uncommon. April–May.

### 45. ARCTIUM L.

Biennial, alternate-leaved, herbs. Heads corymbose-paniculate. Involucre globular, its scales tipped with hooked bristles. Pappus of short rough bristles. Flowers red or white.

**1. A. minus** Schk. BURDOCK. 2°–6° high : leaves large, ovate cordate, more or less dentate and tomentose beneath : heads 6″–8″ broad.—Common in waste places. July–October.

## 46. CARDUUS L.

Prickly herbs with alternate leaves and large terminal heads of purple flowers. Involucral scales much imbricated, sharp-pointed. Pappus plumose.

| | |
|---|---|
| Heads less than 1′ broad. | 1. *C. arvensis.* |
| Heads more than 1′ broad. | |
| Stems strongly wing-margined. | 2. *C. lanceolatus.* |
| Stems not wing-margined. | |
| Leaves not white-tomentose above. | 3. *C. altissimus.* |
| Leaves white-tomentose on both sides. | 4. *C. undulatus.* |

**1. C. arvensis** (L.) Robs. CANADA THISTLE. Perennial by slender rootstocks, 1°–3° high : leaves oblong-lanceolate, sinuate-pinnatifid, nearly glabrous : heads dioecious : outer involucral scales appressed-tipped.—Adventized in waste places near Brooklyn and 27th, Lydia and Independence, and on South Troost, Kansas City, and at Sheffield. June–July.

**2. C. lanceolatus** L. COMMON THISTLE. Biennial, 3°–5° high : leaves sinuate-pinnatifid, woolly beneath : involucral scales tipped with spreading sharp bristles.—Commonly naturalized in fields. July–September.

**3. C. altissimus** L. TALL THISTLE. Biennial, 3°–10° tall : leaves ovate-lanceolate, spinulosely dentate or rarely pinnatifid : outer involucral scales sharp-tipped.—Abundant in thickets throughout. July–October.

**4. C. undulatus** Nutt. LOW THISTLE. Biennial, 1°–4° high, woolly : leaves oblong-lanceolate, somewhat pinnatifid : outer involucral scales sharp-pointed : heads large.—Adventized at Sheffield, Independence and Glendale. July–September.

## 47. CENTAUREA L.

Marginal flowers with enlarged corolla, neutral. Pappus of several bristles.

| | |
|---|---|
| Plant floccose-pubescent above. | 1. *C. Cyanus.* |
| Plant glabrate. | 2. *C. Americana.* |

**1. C. Cyanus** L. BLUE BOTTLE. Annual, 1°–2° high : leaves linear-lanceolate, entire : flowers bluish-purple, 1′ broad.—Adventized around Sibley and Independence. June–August.

**2. C. Americana** Nutt. STAR THISTLE. Annual, 1°–3° high : leaves oblong-lanceolate, nearly entire : flowers pink-purple. 1′–2½′ broad.—Found as a waif between Dodson and Red Bridge. July–August.

## SUMMARY.

| Name of Family. | Number of Genera. | Number of Species. | Number of Varieties. |
|---|---|---|---|
| 1. Ophioglossaceae | 2 | 3 | |
| 2. Osmundaceae | 1 | 1 | |
| 3. Polypodiaceae | 11 | 13 | 1 |
| 4. Salviniaceae | 1 | 1 | |
| 5. Equisetaceae | 1 | 4 | |
| 6. Isoetaceae | 1 | 1 | |
| 7. Pinaceae | 1 | 1 | |
| 8. Typhaceae | 1 | 2 | |
| 9. Sparganiaceae | 1 | 2 | |
| 10. Naiadaceae | 2 | 4 | |
| 11. Alismaceae | 4 | 6 | 1 |
| 12. Vallisneriaceae | 1 | 1 | |
| 13. Gramineae | 55 | 138 | 6 |
| 14. Cyperaceae | 11 | 86 | 10 |
| 15. Araceae | 2 | 3 | |
| 16. Lemnaceae | 3 | 6 | 1 |
| 17. Commelinaceae | 2 | 4 | |
| 18. Pontederiaceae | 2 | 4 | |
| 19. Juncaceae | 1 | 9 | |
| 20. Melanthaceae | 1 | 1 | |
| 21. Liliaceae | 8 | 11 | |
| 22. Convallariaceae | 4 | 5 | |
| 23. Smilaceae | 1 | 2 | 1 |
| 24. Amaryllidaceae | 1 | 1 | |
| 25. Dioscoreaceae | 1 | 1 | |
| 26. Iridaceae | 3 | 6 | |
| 27 Orchidaceae | 6 | 9 | |
| 28. Juglandaceae | 2 | 7 | |
| 29. Salicaceae | 2 | 9 | 1 |
| 30. Betulaceae | 2 | 3 | |
| 31. Fagaceae | 1 | 11 | |
| 32. Ulmaceae | 2 | 5 | 1 |
| 33. Moraceae | 4 | 4 | |
| 34. Urticaceae | 5 | 5 | |
| 35. Santalaceae | 1 | 1 | |
| 36. Aristolochiaceae | 2 | 2 | |
| 37. Polygonaceae | 3 | 27 | 3 |
| 38. Chenopodiaceae | 7 | 17 | 3 |

| Name of Family. | Number of Genera. | Number of Species. | Number of Varieties. |
|---|---|---|---|
| 39. Amaranthaceae | 3 | 8 | 2 |
| 40. Phytolaccaceae | 1 | 1 | |
| 41. Nyctaginiaceae | 1 | 4 | 1 |
| 42. Aizoaceae | 1 | 1 | |
| 43. Portulacaceae | 3 | 5 | |
| 44. Caryophyllaceae | 11 | 16 | 1 |
| 45. Nymphaeaceae | 1 | 1 | |
| 46. Ceratophyllaceae | 1 | 1 | |
| 47. Anonaceae | 1 | 1 | |
| 48. Ranunculaceae | 12 | 26 | |
| 49. Berberidaceae | 2 | 2 | |
| 50. Menispermaceae | 1 | 1 | |
| 51. Papaveraceae | 4 | 8 | |
| 52. Cruciferae | 17 | 38 | |
| 53. Capparidaceae | 2 | 2 | |
| 54. Crassulaceae | 2 | 2 | |
| 55. Saxifragaceae | 1 | 1 | |
| 56. Grossulariaceae | 1 | 1 | |
| 57. Platanaceae | 1 | 1 | |
| 58. Rosaceae | 9 | 24 | |
| 59. Pomaceae | 3 | 7 | |
| 60. Drupaceae | 2 | 5 | |
| 61. Mimosaceae | 2 | 2 | |
| 62. Caesalpiniaceae | 4 | 7 | |
| 63. Papilionaceae | 19 | 54 | 5 |
| 64. Geraniaceae | 1 | 2 | |
| 65. Oxalidaceae | 1 | 4 | |
| 66. Linaceae | 1 | 3 | |
| 67. Zygophyllaceae | 1 | 1 | |
| 68. Rutaceae | 1 | 1 | |
| 69. Simarubaceae | 1 | 1 | |
| 70. Polygalaceae | 1 | 2 | |
| 71. Euphorbiaceae | 5 | 19 | |
| 72. Callitrichaceae | 1 | 2 | |
| 73. Anacardiaceae | 1 | 5 | |
| 74. Celastraceae | 2 | 2 | |
| 75. Staphyleaceae | 1 | 1 | |
| 76. Aceraceae | 1 | 4 | |
| 77. Hippocastanaceae | 1 | 1 | |
| 78. Balsaminaceae | 1 | 2 | |
| 79. Rhamnaceae | 2 | 3 | |
| 80. Vitaceae | 3 | 6 | |
| 81 Tiliaceae | 1 | 1 | |
| 82. Malvaceae | 6 | 10 | |

| Name of Family. | Number of Genera. | Number of Species. | Number of Varieties. |
|---|---|---|---|
| 83. Hypericaceae | 1 | 5 | |
| 84. Elatinaceae | 2 | 2 | |
| 85. Cistaceae | 2 | 3 | |
| 86. Violaceae | 2 | 9 | |
| 87. Loasaceae | 1 | 1 | |
| 88. Cactaceae | 1 | 1 | |
| 89. Lythraceae | 5 | 6 | |
| 90. Onagraceae | 8 | 16 | 1 |
| 91. Haloragidaceae | 1 | 1 | |
| 92. Araliaceae | 1 | 1 | |
| 93. Umbelliferae | 17 | 22 | |
| 94. Cornaceae | 1 | 3 | |
| 95. Monotropaceae | 1 | 1 | |
| 96. Primulaceae | 7 | 8 | |
| 97. Ebenaceae | 1 | 1 | |
| 98. Oleaceae | 1 | 3 | |
| 99. Gentianaceae | 3 | 5 | |
| 100. Apocynaceae | 1 | 3 | |
| 101. Asclepiadaceae | 4 | 12 | 2 |
| 102. Convolvulaceae | 3 | 8 | 1 |
| 103. Cuscutaceae | 1 | 6 | |
| 104. Polemoniaceae | 2 | 4 | |
| 105. Hydrophyllaceae | 2 | 3 | |
| 106. Boraginaceae | 8 | 14 | |
| 107. Verbenaceae | 2 | 8 | |
| 108. Labiatae | 20 | 39 | |
| 109. Solanaceae | 6 | 19 | 1 |
| 110. Scrophulariaceae | 17 | 30 | |
| 111. Lentibulariaceae | 1 | 2 | |
| 112. Orobanchaceae | 1 | 1 | |
| 113. Bignoniaceae | 2 | 2 | |
| 114. Martyniaceae | 1 | 1 | |
| 115. Acanthaceae | 2 | 3 | |
| 116. Phrymaceae | 1 | 1 | |
| 117. Plantaginaceae | 1 | 7 | |
| 118. Rubiaceae | 4 | 9 | |
| 119. Caprifoliaceae | 5 | 6 | |
| 120. Valerianaceae | 1 | 2 | |
| 121. Cucurbitaceae | 3 | 3 | |
| 122. Campanulaceae | 3 | 7 | |
| 123. Cichoriaceae | 9 | 17 | |
| 124. Ambrosiaceae | 3 | 9 | 1 |
| 125. Compositae | 47 | 132 | 8 |
| | 500 | 1,141 | 51 |

# ABBREVIATIONS OF THE NAMES OF AUTHORS.

A. Br. Braun, A.
Adans. Adanson, M.
Ait. Aiton, Wm.
Ait. f. Aiton, W. T.
All. Allioni, C.
Anders. Andersson, N. J.
Andr. Andrews, H. C.
Andrz. Andrzejowski, A. L.
Ard. Arduino, L.
Arnt. Arnott, G. A. W.
Aubl. Aublet, J. B. C. F.
Beauv. Palisot de Beauvois, A. M. F. J.
Benth. Bentham, G.
Bernh. Bernhardi, J. J.
Bess. Besser, U. S. J. S. von.
Bigel. Bigelow, J.
Bisch. Bischoff, G. W.
Boehm. Boehmer, G. R.
Borck. Borckhausen, M. B.
Brit. Britton, N. L.
B.S.P. Britton, N. L.; Stearns, E. A.; Poggenburg, J.
Cass. Cassini, H.
Cav. Cavanilles, A. J.
Clayt. Clayton, John.
Coult. Coulter, J. M.
C. & R. Coulter, J. M., and Rose, J. N.
Darl. Darlington, W.
Davenp. Davenport, G. E.
DC. DeCandolle, A. P.
A.DC. DeCandolle, A.
Dec. Decaisne, J.
Desf. Desfontaine, R. L.
Desv. Desvaux, N. A.
Dietr. Dietrich, D. N. F.
Dougl. Douglas, D.
Dufr. Dufresne, P.
Dumortier, B. C.
Eat. Eaton, A.
Ehrh. Ehrhart, F.
Ell. Elliott, S.
Engelm. Engelmann, G.
Fabr. Fabricius, P. K.
Foug. Fougeroux, A. D.
Forsk. Forskal, P.
Forst. Forster, J. R.
Fresen. Fresenius, J. B. G. W.
Gaertn. Gaertner, J.
Gmel. Gmelin, S. G.
Gmel., J. F. Gmelin, J. F.
Griseb. Grisebach, H. R. A.
Gronov. Gronovius, J. F.
Hack. Hackel, E.
Hall. Haller, Albert von.
Hamilt. Hamilton, W.
Hassk. Hasskarl, J. C.
H.B.K. Humboldt, F. A. von; Bonpland, A., and Kunth, C. S.
Hitch. Hitchcock, A. S.
Hoffmg. Hoffmansegg, J. C.
Hook. Hooker, W. J.
H. & A. Hooker, W. J., and Arnott, G. A. W.
Hook. f. Hooker, J. D.
Jacq. Jacquin, N. J.
Juss. Jussieu, A. L.
A. Juss. Jussieu, A. de.
Karst. Karsten, H.
Kl. Klotsch, J. F.
L. Linnaeus, C., or C. von Linne.
L'Her. L'Heritier de Brutelle, C. L.
Lag. Lagasca, M.
Lam. Lamarck, J. B. A. P. M.
Lehm. Lehmann, J. G. C.
Less. Lessing, C. F.
Lindl. Lindley, John.
Loefl. Loefling, P.
MacM. MacMillan, C.
Marsh. Marshall, H.
Mart. Martens, M.
Mart. & Gal. Martens, M., and Galeotti, H.
Medic. Medicus, F. C.
Meisn. Meisner, C. F.
Michx. Michaux, A.
Michx. f. Michaux, F. A.
Mill. Miller, P.
Millsp. Millspaugh, C. F.
Moq. Moquin-Tandon A.
Muell. Arg. Muller, J., of Aargau.
Muench. Muenchhausen, O. von.
Muhl. Muhlenberg, H. L.
Neck. Necker, N. J. de.
Nees. Nees von Esenbeck.
Nutt. Nuttall, T.
P. Br. Browne, P.

Pers. Persoon, C. H.
Planch. Planchon, J. E.
Poir. Poiret, J. L. M.
Poll. Pollich, J. A.
R. Br. Brown, R.
Raf. Rafinesque-Schmaltz, C. S.
Reichenb. Reichenbach, H. G. L.
Richards. Richardson, J.
R. & S. Roemer, J. J., and Schultes, J. A.
Rottb. Rottboell, C. F.
R. & P. Ruiz, L. H., and Pavon, J.
Rydb. Rydberg, P. A.
Sarg. Sargeant, C. S.
Schk. Schkuhr, C.
Schleich. Schleicher, J. C.
Schleid. Schleiden, M. J.
Schrad. Schrader, H. A.
Schreb. Schreber, J. C. D. von
Schult. Schultes, J. A.
Schwein. Schweinitz, L. D. von.
Scop. Scopoli, J. A.
Scribn. Scribner, F. L.
S. & B. Scribner and Ball.
S. & S. Scribner and Smith.
Seub. Seubert, M.
Shuttlw. Shuttleworth, R.
Soland. Solander, D.
Spreng. Sprengel, K.
Steud. Steudel, E. G.
Sudw. Sudworth, G. B.
Sw. Swartz, Olof.
S. Wats. Watson, Sereno.
Thunb. Thunberg, C. P.
Torr. Torrey, J.
T. & G. Torrey, J., and Gray, A.
Torr. & Hook. Torrey, J., and Hooker, W. J.
Tourn. Tournefort, J. P. de.
Trin. Trinius, K. B.
Tuckerm. Tuckerman, E.
Underw. Underwood, L. M.
Vent. Ventenat, E. P.
Wahl. Wahlenberg, G.
Walp. Walpers, W. G.
Walt. Walter, T.
Wats. Watson, S.
Weinm. Weinmann.
Willd. Willdenow, C. L.

# GLOSSARY.

**Acaulescent.** Apparently stemless.
**Accumbent.** Edges of cotyledon folded against radicle.
**Achene.** A dry 1-celled, 1-seeded fruit with tight-fitting pericarp.
**Acicular.** Needle-shaped.
**Acuminate.** Long-tapering at the end.
**Acute.** Sharp-pointed at the end, but not tapering.
**Adnate.** Attached.
**Adventive.** Not native and but imperfectly naturalized.
**Alate.** Winged.
**Albumen.** Nutritive material around the embryo of a seed.
**Alliaceous.** Onion-like.
**Alternate.** Not opposite.
**Ament.** A dense, usually elongated, cluster of imperfect bracted flowers.
**Amphitropous.** When the ovule is partly inverted.
**Amplexicaul.** Clasping the stem.
**Anastomosing.** Forming a net-work.
**Anatropous.** Ovule inverted so that the micropyle is close to the hilum.
**-androus.** In composition, stamens.
**Angiospermous.** Seeds borne within a pericarp.
**Annual.** A plant of one year's duration. *Winter Annual* when the seed germinates in the fall and the plant matures the following season.
**Annular.** Ring-shaped.
**Anther.** The upper portion of the stamen containing the pollen.
**Antherid.** The male reproductive organ in the higher cryptogams.
**Apetalous.** Without petals.
**Apical.** Situated at the apex.
**Apiculate.** Ending in a minute tip.
**Appressed.** Lying close against.
**Aquatic.** Growing in water.
**Arachnoid.** Cobwebby.
**Arborescent.** Tree-like.
**Archegone.** The female reproductive organ in the higher cryptogams.
**Areolate.** Surface divided into small spaces by veinlets.
**Aril.** A seed appendage growing near the hilum.
**Arillate.** Having an aril.
**Aristate.** Tipped by an awn or bristle.
**Aristulate.** Diminutive of aristate.
**Articulate.** Jointed.
**Ascending.** Rising obliquely.
**Attenuate.** Becoming very slender.
**Auricle.** An ear-shaped appendage.
**Auricled.** Possessing auricles.
**Awn.** A slender bristle-shaped appendage.
**Axil.** The angle formed where a leaf or branch unites with the stem.

**Axillary.** Situated in an axil.
**Axis.** The central support of a group of organs.

**Barbed.** Furnished with short usually reflexed bristles.
**Barbellate.** Minutely barbed.
**Beaked.** Ending in a stout elongated tip.
**Berry.** A fruit with a fleshy pericarp.
**Bidentate.** Having two teeth.
**Biennial.** A plant of two years' duration.
**Bilabiate.** With two lips.
**Bipinnate.** Twice pinnate.
**Blade.** The expanded portion of the leaf.
**Bract.** A usually diminutive leaf subtending a flower or group of flowers.
**Bracteate.** Possessing bracts.
**Bracteolate.** Possessing bractlets.
**Bractlet.** A small or secondary bract.
**Bristle.** A stiff hair.
**Bud.** An unexpanded or undeveloped leaf, branch or flower.
**Bulb.** A fleshy scaly leaf-bud, usually underground.
**Bulblet.** A small bulb.

**Caducous.** Early falling off.
**Caespitose.** Growing in tufts.
**Callosity.** A small hard protuberance.
**Callus.** A callosity.
**Calyculate.** With bracts subtending the flower imitating an outer calyx.
**Calyx.** The outer floral envelope.
**Campanulate.** Shaped like a bell.
**Campylotropous.** A much incurved seed or ovule.
**Canescent.** Covered with gray or hoary usually short fine hairs.
**Capitate.** In a dense head-like cluster.
**Capsule.** A dry dehiscent fruit with two or more carpels.
**Carinate.** Longitudinally ridged or keeled.
**Carpel.** The modified leaf forming the simple pistil, or one of the parts of the compound pistil.
**Cartilaginous.** Firm and tough like cartilage.
**Caruncle.** Appendage to a seed growing near the hilum.
**Carunculate.** Bearing a caruncle.
**Caryopsis.** A one-celled one-seeded fruit with the thin pericarp adnate to the seed.
**Catkin.** An ament.
**Caudate.** Possessing a slender tail-like appendage.
**Caudicle.** The stalk of a pollen mass.
**Caulescent.** Having a stem.
**Cell.** A cavity.
**Cespitose.** Caespitose.
**Chaff.** A dry and membranous scale.
**Channelled.** With a deep longitudinal groove.
**Chartaceous.** Thick papery in texture.
**Chlorophyll.** The green coloring matter in plants.
**Ciliate.** Fringed with marginal hairs.

**Ciliolate.** Minutely ciliate.
**Cinereous.** Ash-colored.
**Circinate.** Rolled downward from the apex.
**Circumscissile.** Dehiscent by a horizontal circular line.
**Clavate.** Shaped like a club.
**Cleistogamous.** Flowers fertilized in the bud without opening.
**Cleft.** Cut about to the middle or to the middle of a half.
**Coalescent.** United.
**Coma.** A tuft of small hairs.
**Commissure.** The surface of one carpel contiguous to the other carpel.
**Compound.** Composed of two or more similar parts.
**Conduplicate.** Folded lengthwise together.
**Coniferous.** Bearing cones.
**Connate.** United.
**Connective.** That part of the stamen between the two anther cells.
**Connivent.** Approaching closely and often connecting.
**Convolute.** Longitudinally rolled up.
**Cordate.** Heart-shaped.
**Coriaceous.** Leathery in texture.
**Corm.** The solid enlarged fleshy base of a stem.
**Corolla.** The inner of two series of floral envelopes.
**Corona.** A crown-like appendage, especially to the corolla.
**Corymb.** A raceme with the lower pedicels elongated so that the inflorescence is flat-topped.
**Corymbose.** Borne in corymbs.
**Costate.** Ribbed.
**Cotyledon.** The rudimentary leaf or leaves found in the seed embryo.
**Crenate.** Having rounded teeth.
**Crenulate.** Diminutive of crenate.
**Crested.** Having a crest-like appendage.
**Crown.** Corona.
**Cucullate.** Hood-shaped.
**Culm.** The stem of sedges and grasses.
**Cuneate.** Shaped like a wedge.
**Cusp.** A sharp, rigid point.
**Cuspidate.** Bearing a cusp.
**Cyme.** A flat-topped inflorescence with the central flowers blooming first.
**Cymose.** Cyme-like.

**Deciduous.** Not persistent and evergreen.
**Decompound.** Twice or more divided.
**Decumbent.** Reclining, with ascending ends.
**Decurrent.** Adnate down the stem below the insertion.
**Deflexed.** Turned abruptly downward.
**Dehiscent.** Opening regularly.
**Deltoid.** Broadly triangular.
**Dentate.** Toothed, the teeth outwardly projecting.
**Denticulate.** Diminutive of dentate.
**Depauperate.** Stunted.
**Depressed.** Flattened from above.
**Diadelphous.** Stamens combined in two sets.

**Diandrous.** Possessing two stamens.
**Dichotomous.** Bi-forked equally and regularly.
**Dicotyledonous.** Possessing two cotyledons.
**Didymous.** Twin-like.
**Didynamous.** Stamens in two pairs of unequal length.
**Diffuse.** Loosely and much spreading.
**Digitate.** Diverging, like spreading fingers.
**Dimorphous.** Two-formed.
**Dioecious.** Bearing male and female flowers on different plants.
**Discoid.** Disk-like; a flower head with none but rayless flowers.
**Disk.** A developed receptacle at or around the base of the pistil, especially the enlarged receptacle on which the numerous flowers are borne in Compositae.
**Disk flowers.** The central flowers in the head in Compositae, as distinguished from the marginal flowers.
**Dissected.** Divided into numerous segments.
**Distichous.** Arranged in two vertical ranks.
**Distinct.** Apparent; not united.
**Divaricate.** Widely spreading.
**Divided.** Cut to the base or mid-nerve.
**Dorsal.** Pertaining to the back.
**Drupaceous.** Drupe-like.
**Drupe.** A fleshy usually simple fruit with exocarp fleshy and endocarp stony.
**Drupelet.** Diminutive of drupe.

**Echinate.** Prickly.
**Elliptical.** Oval.
**Emarginate.** With a shallow notch at the apex.
**Embryo.** The rudimentary plant within the seed.
**Endocarp.** The inner layer of the pericarp.
**Endogenous.** Forming new tissue within instead of by superficial layers.
**Endosperm.** The albumen of a seed.
**Entire.** Without toothing, lobes or divisions.
**Ephemeral.** Lasting less than a day.
**Epidermis.** An outer covering.
**Epigynous.** Growing on the upper part of the ovary.
**Epiphyte.** An air plant.
**Equitant.** Conduplicate distichous leaves.
**Excurrent.** Running out beyond the main body.
**Exfoliating.** Coming off in layers.
**Exocarp.** The outer layer of the pericarp.
**Exogenous.** Growing by new tissue formed outside the old.
**Exserted.** Projecting beyond the surrounding organs.
**Exstipulate.** Without stipules.
**Extrorse.** Facing outward.
**Falcate.** Scythe-shaped.
**Farinose.** Covered with a meal-like powder.
**Fascicle.** A close, dense bundle or cluster.
**Fastigiate.** Erect stems or branches borne closely together.
**Ferrugi ous.** Color of rust.

**Fertile.** Productive.
**Fertilization.** Intermingling of the contents of a male and female cell.
**Fibrillose.** Bearing fine fibers.
**Filament.** The slender portion of the stamen supporting the anther.
**Filiform.** Thread-shaped.
**Fimbriate.** Fringed.
**Fimbrillate.** Diminutive of fimbriate.
**Flaccid.** Lacking rigidity.
**Flexuous.** Zigzag.
**Floccose.** Bearing tufts of wool-like hairs.
**Foliaceous.** Leaf-like.
**-foliate.** In composition referring to leaves.
**-foliolate.** In composition referring to leaflets.
**Follicle.** A one-celled fruit dehiscing by one suture.
**Free.** Not attached to other organs.
**Frond.** The leaf of ferns.
**Frutescent.** Shrub-like.
**Fugacious.** Early falling away.
**Fugitive.** Plants not native and apparently not permanently established.
**Funicle.** The stalk of an ovule or seed.
**Fuscous.** Grayish-brown.
**Fusiform.** Spindle-shaped.

**Galea.** A helmet-shaped portion of a floral envelope.
**Galeate.** Provided with a galea.
**Gamopetalous.** Having the petals more or less united.
**Geniculate.** Bent abruptly.
**Gibbous.** With a swelling on one side.
**Glabrate.** Nearly without hairs.
**Glabrous.** Entirely without hairs.
**Gland.** A secreting organism.
**Glandular.** Bearing glands.
**Glaucous.** Covered with a bluish-white bloom.
**Globose.** Round.
**Glomerate.** Compactly clustered.
**Glumaceous.** Glume-like.
**Glume.** The scaly bractlets of the inflorescence in sedges and grasses.
**Granular.** Resembling or composed of grains.
**Granulose.** Granular.
**Gregarious.** Growing in groups.
**Gymnospermous.** Plants with naked seeds.
**Gynandrous.** Having the pistil supporting the stamens.
**Gynobase.** A prolongation or enlargement of the receptacle bearing the ovary.

**Habit.** The general appearance or aspect of a plant.
**Habitat.** Place of growth of a plant.
**Hastate.** Arrow-shaped, but with basal lobes spreading at right angles.
**Head.** A dense usually spherical cluster of sessile (or nearly so) flowers.
**Herbaceous.** Herb-like; leaf-like in color or texture.
**Heterogamous.** Bearing two kinds of flowers.

**Hilum.** The point of attachment of a seed or ovule.
**Hirsute.** Covered with coarse stiffish hairs.
**Hispid.** Covered with rigid bristly hairs.
**Hispidulous.** Diminutive of hispid.
**Hoary.** Covered with a grayish-white close, fine pubescence.
**Homogamous.** Bearing one kind of flower only.
**Hyaline.** Thin; translucent.
**Hybrid.** A cross between two species.
**Hypocotyl.** The radicle.
**Hypogynous.** Situated on the receptacle at or below the base of the ovary.

**Imbricate.** Overlapping.
**Imperfect.** Without both sexual organs fully developed.
**Incised.** Irregularly deeply and sharply cut.
**Included.** Not protruding beyond the surrounding envelope.
**Incumbent.** Having the back of one of the cotyledons lying against the radicle.
**Indefinite.** Not constant in number, and numerous.
**Indehiscent.** Not opening.
**Indigenous.** Native.
**Indusium.** The membrane covering the fruit-dot in ferns.
**Inequilateral.** With sides unequal.
**Inferior.** Situated below.
**Inflexed.** Bent inward abruptly.
**Inflorescence.** The flowering part of plants with especial reference to the mode of arrangement.
**Inserted.** Attached to.
**Internode.** Lying between two nodes.
**Introrse.** Turned inward.
**Involucel.** A secondary involucre.
**Involucre.** A circle of bracts subtending a flower or a number of flowers.
**Involute.** Inwardly rolled.
**Irregular.** A flower in which members of the same class of organs are dissimilar.

**Keel.** A longitudinal ridge; the two united lower petals of a pea flower.

**Labiate.** Lipped.
**Laciniate.** Cut into narrow lobes.
**Lanceolate.** Shaped like a lance; broadest below the middle and tapering upward.
**Lateral.** Pertaining to the side.
**Lax.** Loose and slender.
**Leaflet.** A division of a compound leaf.
**Legume.** A simple fruit dehiscent by both sutures.
**Lenticular.** Shaped like a lens.
**Ligulate.** Provided with a ligule.
**Ligule.** A strap-shaped corolla, as the rays of Compositae; a scarious projection from the summit of the sheaths in Gramineae.
**Limb.** The expanded portion of a floral envelope.
**Linear.** Long and narrow with sides about parallel.
**Lobe.** A segment of an organ.

**Lobed.** Cut into lobes; cut about to the middle.
**Loment.** A jointed legume.
**Loculicidal.** Applied to capsules splitting through the walls of the carpels.
**Lunate.** Shaped like a crescent.
**Lyrate.** Pinnatifid with the terminal lobe much the largest.

**Macrosporange.** A sporange containing macrospores.
**Macrospore.** The larger of two kinds of spores borne by certain plants.
**Marcescent.** Withering, but not falling.
**Marginal.** Near the edge.
**Marginate.** Furnished with a border.
**Membranaceous.** Thin and membrane-like.
**Micropyle.** The orifice of the ovule and the corresponding point on the seed.
**Microsporange.** A sporange containing microspores.
**Microspores.** The smaller of two kinds of spores borne by certain plants.
**Mid-rib (mid-vein).** The central vein of a leaf.
**Monadelphous.** Applied to stamens united by their filaments.
**Moniliform.** Like a string of beads.
**Monocotyledonous.** Plants having but one cotyledon.
**Monoecious.** Bearing stamens and pistils in different flowers, but on the same plant.
**Monstrous.** Deformed.
**Mucronate.** Bearing a short abrupt tip.
**Mucronulate.** Diminutive of mucronate.
**Multifid.** Cut into numerous segments.
**Muricate.** Roughened with short hard points.
**Muticous.** Without a point.

**Naked.** Without the covering normally present in related species.
**Naturalized.** Plants not native, but so thoroughly established that they appear native.
**Nectary.** An organ secreting sweet matter.
**Nerve.** A vein.
**Node.** The point on a stem on which a leaf is normally borne.
**Nodose.** Knotty.
**Nodulose.** Diminutive of nodose.
**Nut.** A hard indehiscent, 1-celled, 1-seeded fruit.
**Nutlet.** Diminutive of nut.

**Obcompressed.** Compressed from back and front instead of from the sides.
**Obcordate.** Inversely heart-shaped.
**Oblanceolate.** Inversely lance-shaped.
**Oblique.** With unequal sides.
**Oblong.** Longer than broad with the sides parallel.
**Obovate.** Inversely ovate.
**Obovoid.** Inversely ovoid.
**Obsolete.** Rudimentary or absent.
**Obtuse.** Blunt or rounded.
**Ochreae.** Tubular sheathing stipules.
**Ochreolae.** Organisms resembling ochreae subtending flowers.
**Ochroleucous.** Yellowish-white.
**Operculate.** Furnished with a lid.

**Operculum.** A lid.
**Orbicular.** Circular in outline or nearly so.
**Orthotropous.** An erect ovule with the micropyle at the apex and the hilum at the base.
**Oval.** Broadly elliptical.
**Ovary.** The portion of the pistil containing the ovules.
**Ovate.** Egg-shaped with the broader end down; broadly and shortly lanceolate.
**Ovule.** The body which after fertilization becomes the seed.

**Palate.** The projection on the lower lip of a personate corolla which closes the throat.
**Palet.** The thin chaffy bract subtending the flower in the Gramineae.
**Palmate.** Resembling the hand with spreading fingers.
**Panicle.** An irregular compound inflorescence.
**Panicled, paniculate.** Borne in panicles.
**Papilionaceous.** A name applied to the peculiar corolla of the Leguminosae; pea-like.
**Papillose.** Bearing minute projections.
**Pappus.** The calyx in Compositae, consisting of awns, bristles, teeth, etc.
**Parasitic.** Growing on and absorbing nourishment from other plants.
**Parietal.** Borne on the inner surface of the wall of a capsule.
**Parted.** Cut down nearly to the base.
**Pectinate.** Cut into narrow crowded segments.
**Pedate.** Palmately cut, the lateral segments 2-cleft.
**Pedicel.** A secondary peduncle.
**Pedicellate.** Borne on a pedicel.
**Peduncle.** A primary flower-stalk, supporting a flower or cluster of flowers.
**Pedunculate.** Borne on a peduncle.
**Peltate.** Shield-shaped and attached to a stalk by the lower surface.
**Perennial.** Living for years.
**Perfect.** Applied to a flower having both sexual organs.
**Perfoliate.** A leaf clasping the stem so that the stem appears to pass through it.
**Perianth.** The modified floral leaves taken collectively.
**Pericarp.** The wall of the matured ovary.
**Perigynium.** The sac enclosing the achene in *Carex*.
**Perigynous.** Attached to the perianth and hence around the ovary.
**Persistent.** Unusually long-continuous.
**Personate.** Two-lipped with the throat closed by a protuberance.
**Petal.** A division of the corolla.
**Petaloid.** Resembling a petal.
**Petiolate.** Having a petiole.
**Petiole.** The leaf stalk.
**Petiolulate.** Having a petiolule.
**Petiolule.** A small petiole, supporting a leaflet.
**Phaenerogamous.** Plants producing true flowers and seeds.
**Phyllodia.** A bladeless petiole.
**Pilose.** Bearing long soft hairs.
**Pinna** (pl. **pinnae**). One of the primary divisions of a pinnately compound leaf.

**Pinnate.** A compound leaf with the leaflets arranged on each side of a common axis.
**Pinnatifid.** Pinnately cleft.
**Pinnule.** A division of a pinna.
**Pistil.** The female reproductive organs in the higher plants.
**Pistillate.** Provided with pistils, and usually implying the absence of stamens.
**Placenta.** An ovule-bearing surface.
**Plicate.** Folded lengthwise.
**Plumose.** Plume-like; having fine hairs on each side.
**Plumule.** The growing point of the embryo.
**Pod.** A dry, dehiscent fruit.
**Pollen.** The fertilizing bodies contained in the anther.
**Pollinia.** The waxy pollen-masses of orchids and milk-weeds.
**Polygamous.** Bearing both perfect and imperfect flowers on the same plant.
**Polypetalous.** Having separate petals.
**Pome.** A fleshy fruit like an apple.
**Procumbent.** Lying flat on the ground.
**Prothallium.** The sexual generation of Pteridophyta.
**Puberulent.** Short hairy.
**Pubescent.** Covered with hairs, especially if short and soft.
**Punctate.** Dotted with translucent spots or pits.
**Pungent.** Tipped with a rigid point.
**Pyriform.** Shaped like a pear.

**Raceme.** An elongated flower cluster in which the flowers are pedicelled and the lower bloom first.
**Racemose.** Borne in racemes.
**Rachilla.** The axis of the spikelet in Gramineae.
**Rachis.** The axis of a spike, raceme or compound leaf.
**Radiate.** Bearing ray-flowers; spreading from a common center.
**Radicle.** The rudimentary stem in the embryo.
**Ray.** A branch of an umbel; a marginal flower when distinct from the others.
**Receptacle.** That part of the axis bearing the reproductive organs; or the collective flowers in Compositae.
**Recurved.** Backwardly curved.
**Reflexed.** Abruptly recurved.
**Regular.** Having all parts of the same nature similar.
**Reniform.** Kidney-shaped.
**Repand.** Having a wavy margin.
**Reticulate.** Netted-veined.
**Retrorse.** Turned back or downward.
**Retuse.** Having a shallow notch at the rounded end.
**Revolute.** Rolled backward.
**Rhachis.** The same as rachis.
**Rhizome.** A rootstock.
**Ringent.** The gaping mouth of a bilabiate corolla.
**Rostrate.** Beaked.
**Rotate.** Flat and round in outline.

**Rufous.** Red-brown.
**Rugose.** Wrinkled.
**Runcinate.** Sharply jagged with the lobes turned backward.
**Runner.** A long slender stolon.

**Sac.** A pouch-like body.
**Saccate.** Shaped like a sac.
**Sagittate.** Shaped like an arrow-head, the lobes turned downward.
**Salver-shaped** (salver-form). A corolla with a narrow tube abruptly expanded into a spreading limb.
**Samara.** An indehiscent winged fruit.
**Saprophyte.** A plant growing on dead organic matter.
**Scabrous.** Rough.
**Scape.** A stem above ground bearing flowers, but not leaves.
**Scapose.** Scape-like; having scapes.
**Scarious.** Thin, dry, membranous and not green.
**Scorpoid.** An inflorescence coiled up in the bud, but unrolled in growth.
**Scurfy.** Covered with minute scales.
**Secund.** Borne on but one side of the axis.
**Seed.** The ripened ovule.
**Segment.** One of the divisions of a cut or divided organ.
**Sepal.** One of the divisions of the calyx.
**Septicidal.** Applied to capsules splitting through the partitions of the carpels.
**Septum.** A partition.
**Serrate.** Provided with teeth pointing forward.
**Serrulate.** Diminutive of serrate.
**Sessile.** Not stalked.
**Setaceous.** Bristle-like.
**Setose.** Bristly.
**Sheath.** A tube-like envelope, especially the lower part of the leaf in Gramineae.
**Silicle.** A silique little longer than wide.
**Silique.** An elongated two-valved capsule with two parietal placentae, usually dehiscent.
**Simple.** Not compound.
**Sinuate.** With the margins strongly wavy.
**Sinus.** The cleft between lobes.
**Sorus** (pl. **sori**). A cluster of fruit-dots.
**Spadix.** A fleshy flower spike.
**Spathe.** The bract or bracts subtending the inflorescence in certain monocotyledonous plants.
**Spatulate.** Shaped like a spatula.
**Spicate.** Arranged in a spike.
**Spike.** A dense elongated inflorescence with sessile flowers.
**Spikelet.** Diminutive of spike; especially applied to the "flowers" of grasses and sedges.
**Spinose.** Having spines.
**Sporange** (**sporangium**). A spore-case.
**Spore.** Asexual vegetative bodies in Cryptogamia.
**Sporocarp.** An organ containing sporangia or spores.

**Spreading.** Widely divergent; nearly prostate.
**Spur.** A tube-like projection from part of a blossom.
**Squarrose.** Strongly spreading and projecting.
**Stamen.** The male sexual organ in a plant.
**Staminodium.** A sterile stamen.
**Standard.** The upper petal of a pea corolla.
**Stellate.** Star-like.
**Sterile.** Unproductive.
**Stigma.** The uppermost portion of the pistil.
**Stipe.** A stalk.
**Stipitate.** Possessing a stipe.
**Stipulate.** Having stipules.
**Stipule.** Appendages to a leaf at the base of the petiole.
**Stolon.** A weak basal branch disposed to root.
**Stoloniferous.** Producing stolons.
**Striate.** Finely lined or ribbed longitudinally.
**Strict.** Very straight and erect.
**Strigose.** Beset with more or less appressed straight hairs.
**Style.** The slender portion of the pistil between the ovary and stigma.
**Stylopodium.** An enlargement at the base of the style.
**Sub-.** A prefix meaning somewhat or slightly.
**Subulate.** Awl-shaped.
**Succulent.** Juicy and fleshy.
**Superior.** Above the surrounding organs.
**Suture.** The line of opening.
**Symmetrical.** Applied to a flower having the same number of parts in each circle.

**Terete.** Circular in cross-section.
**Ternate.** In threes.
**Tetradynamous.** Having four of the six stamens longer than the other two.
**Thallus.** A flat vegetative organ.
**Throat.** That portion of a gamopetalous corolla or gamosepalous calyx between the tube and the limb.
**Thyrse.** A compact panicle.
**Thyrsoid.** Resembling a thyrse.
**Tomentose.** Covered with densely matted hairs.
**Tooth.** A small marginal lobe.
**Torose.** Cylindrical, and contracted at intervals.
**Torulose.** Diminutive of torose.
**Tri-.** In composition, three.
**Triandrous.** Having three stamens.
**Truncate.** Ending abruptly in a straight edge.
**Tuber.** A short, thick underground branch.
**Tuberiferous.** Tuber-bearing.
**Tubercle.** The persistent style base in some sedges.
**Tuberculate.** Bearing short, hard, rounded projections.
**Turbinate.** Inversely conical.
**Umbel.** An inflorescence in which the flower pedicels spring from the same point, and the outer flowers bloom last.
**Umbellate.** Umbel-like.

**Umbellet.** A secondary umbel.
**Undulate.** Having wavy margins.
**Uni-.** In composition, one.
**Utricle.** A one-seeded fruit with a loose pericarp.

**Valvate.** Opening by valves; meeting by the edges without overlapping.
**Vein.** A prominent leaf vein.
**Veins.** The main frame-work of a leaf or other organ.
**Veinlet.** A small vein.
**Velum.** The fold on the inner side at the base of the leaf in *Isoetes*.
**Velutinous.** Velvety.
**Ventral.** Relating to the inner or front surface.
**Ventricose.** Swollen on one side.
**Venation.** The arrangement of veins.
**Vernation.** The arrangement of leaves.
**Versatile.** Applied to an anther attached near the middle and free at the ends.
**Verticillate.** Whorled.
**Villous.** Bearing long, soft, loose hairs.
**Virgate.** Long and slender.
**Viscid.** Glutinous; sticky.

**Whorl.** An arrangement of organs in a circle.
**Wing.** A thin expansion of an organ; the lateral petal in Leguminosae.
**Woolly.** Clothed with long matted hairs.

# ERRATA AND ADDENDA.

Page 2, 3d line from bottom for "grandular" read "glandular."

Page 10, under *Lophotocarpus*, 1st line, for "verticels" read "verticils" and 2d line, for "inclosing" read "enclosing."

Page 14, under 6th line for "waiting" read "wanting."

Page 16, under *Paspalum*, 2d line, read "spikes" for "spike."

Page 19, under *P. miliaceum*, 2d line, read "sheaths" for "sheath."

Page 23, under *M. sobolifera*, 3d line, read "2′–3′" for "2″–3″."

Page 28, under *Bouteloua*, Key, read "spikes" for "spikelets."

Page 29, add:

**35a. BULBILIS** Raf.

A low, creeping, perennial grass with the staminate and pistillate spikelets on distinct culms, the former forming 2–4 one-sided spikes on a relatively long-exserted culm, the latter 2–3 clusters on a very short culm.

**1. B. dactyloides** (Nutt.) Raf. Staminate spikes 2″–2½″ long, 2–3-flowered, sharp-pointed: pistillate spikes subtended by long filiform bracts, scarious-dilated at base: the outer glumes indurated.—Two patches found as a waif along the Santa Fe Railroad east of Sheffield. May–Sept.

Page 36, under *Lolium*, 2d line, for "join" read "joints."

Page 37, under *A. repens*, 5th line, for "forms" read "form."

Page 39, 3d line from bottom for "scales" read "scale."

Page 39, under *Hystrix* for "*elymoides* M. & B." read "*patula* Moench."

Page 41, under *C. strigosus robustior*, 1st line for "8′" read "8″."

Page 47, 19th line, for "*sparganoides*" read "*sparganioides*."

Page 48, under *C. trichocarpa*, 1st line, for "bract" read "bracts."

Page 52, No. 41 should read "*C. cephaloidea*."

Page 53, add: **46a. C. siccata** Dewey. Culms slender, erect, 2°–3° high: leaves 1″–2″ broad: spikes 3–4, 2½″–4″ long, distinct, silvery-brownish, the staminate flowers basal and numerous, or sometimes occupying whole spikes: perigynia 2½″ long, lanceolate, strongly winged.—Locally common on a dry hill near Courtney. June.

Page 66, under Juglandaceae, 4th line, after "1-ovuled" add "ovary."

Page 67, under *H. minima*, 2d line, for "one" read "ones."

Page 70, under *Quercus*, 4th line, "hydrids" should be hybrids."

Page 73, under *Humulus*, 3d line, read "Pistillate flowers two together in the axil of a foliaceous bract."

Page 83, under *A. blitoides*, 2d line, for "bract" read "bracts."

Page 88, the authority for *Cerastium brachypodum* should be (Robinson) Engelm.

Page 96, under *C. montanum*, 2d line, "seeded" should be omitted.

Page 99, the authority for *R. palustris* is (L.) Bess.

Page 106, under *P. pentandra*, 3d line, for "bottom" read "bottoms."

Page 110, for "Caesalpinaceae" read "Caesalpiniaceae."

Page 113, under *Trifolium*, 9th line, read "plant" for "plants."

Page 114, under *T. hybridum*, 3d line, for "peduncled" read "pedicelled."

Page 118, under *Lespedeza*, Key, 8th line, "perennials" should be "perennial" and in 9th line, "annuals" should be "annual."

Page 120, under Geraniaceae "J. St. Hill." should read "J. St. Hil."

Page 121, last line, "calltrop" should read "caltrop."

Page 122, under Euphorbiaceae, "J. St. Hill." should read "J. St. Hil."

Page 128, under *Acer* for var. *barbatum* read var. *Rugelii* (Pax) Wesmael.

Page 129, under Balsaminaceae, 5th line, "by the" should read "into."

Page 131, under *Tilia*, 3d line, "5-delphous" should be "5-adelphous."

Page 135, under *V. Rafinesquii*, 1st line, "annuals" should read "annual."

Page 135, add: **4a. V. viarum** Pollard. Growing in clumps and resembling No. 4, but glabrous or nearly so throughout: leaves ovate-cordate to reniform in outline, 3–9-divided, the divisions very unequal, usually the middle one the longest: peduncles of cleistogamous flowers at first erect, but at length decumbent.—Moist prairies from Levasy to Buckner. April–May.

Page 137, under *Didiplis*, 1st line, "aquatics" should read "aquatic."

Page 142, under *Lomatium*, 2d line, "later" should read "lateral."

Page 143, under *Chaerophyllum*, "chevril" should read "chervil" and "*C. Texensis*" should read "*C. Texanum*."

Page 162, add:

### 7a. DRACOCEPHALUM L.

Herbs with flowers in terminal spikes subtended by conspicuously aristate-toothed bracts. Calyx and corolla each 2-lipped. Stamens four with divergent anther-sacs, the upper pair the longer.

**1. D. parviflorum** Nutt. DRAGON-HEAD. A more or less pubescent annual with spreading branches, about 1° high: leaves ovate, cordate or rounded at base, strongly serrate: bracts usually exceeding the corolla.—Found as a waif at Sheffield. June.

Page 185, add: **1a. L. scariola** L. A taller plant than *L. virosa*, from which it also differs in its more prickly stem, in its strongly sinuate-pinnatifid leaves, and in its paler, more hairy achenes.—Well introduced locally in waste places at Independence, and from the mouth of Sugar Creek to Courtney. June–September.

# INDEX OF LATIN NAMES.


Abutilon, 132
Acalypha, 123
Acanthaceae, 176
Aceraceae, 128
Acer, 128
Acerates, 151
Achillea, 205
Acnida, 83
Acorus, 54
Acuan, 110
Adiantum, 5
Adicea, 74
Aesculus, 128
Afzelia, 173
Agastache, 161
Agrimonia, 106
Agropyron, 37
Agrostemma, 87
Agrostis, 26
Ailanthus, 122
Aizoaceae, 85
Alisma, 10
Alismaceae, 9
Allionia, 84
Allium, 59
Alopecurus, 24
Alsine, 88
Amaranthaceae, 82
Amaranthus, 82
Amaryllidaceae, 62
Ambrosiaceae, 186
Ambrosia, 187
Amelanchier, 108
Ammannia, 137
Amorpha, 114
Ampelopsis, 130
Amphiachyris, 192
Amygdalus, 109
Anacardiaceae, 126
Anagallis, 147
Andropogon, 15
Androsace, 146
Anemone, 91
Angiospermae, 7
Anonaceae, 90
Antennaria, 197
Anthemis, 205
Anthoxanthum, 21
Anychia, 89
Apera, 27
Apiastrum, 143
Apios, 119
Aplectrum, 66
Apocynaceae, 149
Apocynum, 149
Aquilegia, 91
Arabis, 101
Araceae, 54
Araliaceæ, 141
Arctium, 207
Arenaria, 88
Argemone, 95
Arisaema, 54
Aristida, 22
Aristolochiaceae, 75
Aristolochia, 75
Artemisia, 206
Asarum, 75
Asclepiadaceae, 150
Asclepias, 150
Asclepiodora, 151
Asimina, 90
Asparagus, 61
Asplenium, 4
Aster, 194
Astragalus, 115
Athyrium, 4
Atriplex, 81
Avena, 27
Azolla, 6

Balsaminaceae, 129
Baptisia, 112
Barbarea, 98
Batrachium, 93
Beckmannia, 28
Berberidaceae, 94
Bergia, 134
Betulaceae, 69
Bidens, 203
Bignoniaceae, 175
Bikukulla, 95
Blephilia, 164
Boebera, 205
Boehmeria, 74
Boltonia, 194
Boraginaceae, 156
Botrychium, 1
Bouteloua, 28
Brachyelytrum, 23
Brassica, 98
Brauneria, 200
Bromus, 35
Bursa, 100

Cactaceae, 136
Caesalpiniaceae, 110
Calamagrostis, 26
Calamovilfa, 27
Callirhoe, 132
Callitrichaceae, 126
Callitriche, 126
Camelina, 100
Campanulaceae, 182
Campanula, 182
Camptosorus, 4
Cannabis, 73
Capnoides, 96
Capparidaceae, 102
Caprifoliaceae, 179
Cardamine, 99
Carduus, 208
Carex, 45
Caryophyllaceae, 86
Cassia, 110
Catalpa, 175
Caulophyllum, 94
Ceanothus, 129
Celastraceae, 127
Celastrus, 127
Celtis, 72
Cenchrus, 20
Centaurea, 208
Centunculus, 147
Cephalanthus, 178
Cerastium, 88
Ceratophyllaceae, 89
Ceratophyllum, 89
Cercis, 110
Chaerophyllum, 143
Chaetochloa, 19
Chelone, 170
Chenopodiaceae, 79
Chenopodium, 79
Chrysanthemum, 205
Cichoriaceae, 183
Cichorium, 183
Cicuta, 144
Cinna, 26
Circaea, 140
Cistaceae, 134
Claytonia, 85
Clematis, 92
Cleome, 102
Collinsia, 171
Comandra, 75
Commelinaceae, 55
Commelina, 55
Compositae, 188
Conobea, 171
Conringia, 102
Convallariaceae, 61
Convolvulaceae, 152
Convolvulus, 153
Coreopsis, 202
Corispermum, 82
Cornaceae, 145
Cornus, 145
Corylus, 69
Crassulaceae, 102
Crataegus, 108

Crotalaria, 112
Croton, 123
Cruciferae, 96
Cubelium, 136
Cucurbitaceae, 181
Cucurbita, 181
Cuscutaceae, 153
Cuscuta, 153
Cycloloma, 81
Cynoglossum, 156
Cyperaceae, 39
Cyperus, 39
Cypripedium, 64

Dactylis, 33
Datura, 169
Daucus, 142
Delphinium, 91
Dentaria, 100
Deringa, 145
Dianthera, 176
Dicotyledones, 66
Didiplis, 137
Diodia, 178
Dioscoreaceae, 63
Dioscorea, 63
Diospyros, 147
Diplachne, 30
Distichlis, 33
Dodecatheon, 147
Draba, 100
Drupaceae, 109
Dryopteris, 4
Duchesnea, 105
Dulichium, 41

Eatonia, 31
Ebenaceae, 147
Echinodorus, 10
Echium, 158
Eclipta, 199
Elatinaceae, 133
Elatine, 133
Eleocharis, 42
Elephantopus, 190
Eleusine, 29
Elymus, 38
Engelmannia, 199
Epilobium, 139
Equisetaceae, 6
Equisetum, 6
Eragrostis, 30
Erechtites, 207
Erigeron, 197
Eriochloa, 16
Eryngium, 142
Erysimum, 102
Erythraea, 148
Erythronium, 60
Euonymus, 127
Eupatorium, 191
Euphorbiaceae, 122
Euphorbia, 124
Euthamia, 194

Fagaceae, 70
Fagopyrum, 76
Falcata, 119
Festuca, 35
Filix, 3
Fimbristylis, 43
Flaveria, 204
Foeniculum, 143
Fragaria, 105
Fraxinus, 148
Froelichia, 84
Fuirena, 44

Gaillardia, 205
Galinsoga, 204
Galium, 178
Gaura, 140
Gemmingia, 63
Gentianaceae, 148
Gentiana, 149
Geraniaceae, 120
Geranium, 120
Gerardia, 173
Geum, 106
Gleditsia, 111
Glycyrrhiza, 116
Gnaphalium, 198
Gonolobus, 152
Gramineae, 11
Gratiola, 172
Grindelia, 192
Grossulariaceae, 103
Gymnocladus, 111
Gymnospermae, 7
Gyrostachys, 65

Habenaria, 65
Haloragidaceae, 140
Hartmannia, 139
Hedeoma, 164
Helenium, 204
Helianthemum, 134
Helianthus, 201
Heliopsis, 199
Hemerocallis, 59
Hemicarpha, 45
Heteranthera, 56
Heuchera, 103
Hibiscus, 132
Hicoria, 66
Hieracium, 186
Hippocastanaceæ, 128
Holcus, 27
Homalocenchrus, 20
Hordeum, 37
Houstonia, 178
Humulus, 73
Hydrastis, 90
Hydrophyllaceae, 155
Hydrophyllum, 155
Hypericaceae, 133
Hypericum, 133
Hypoxis, 62
Hystrix, 38

Ilysanthes, 172
Impatiens, 129
Inula, 198
Iodanthus, 98
Ipomoea, 152
Iridaceae, 63
Iris, 63
Isanthus, 160
Isoetaceae, 6
Isoetes, 7
Isopyrum, 90
Iva, 186

Juglandaceae, 66
Juglans, 66
Juncaceae, 57
Juncus, 57
Juniperus, 7
Jussiaea, 138

Kallstroemia, 121
Kochia, 82
Koeleria, 32
Koellia, 164
Korycarpus, 32
Kuhnia, 191
Kyllinga, 41

Labiatae, 159
Lacinaria, 191
Lactuca, 184
Lamium, 162
Lappula, 156
Lechea, 134
Lemnaceae, 54
Lemna, 55
Lentibulariaceae, 174
Leonurus, 162
Lepidium, 97
Leptandra, 173
Leptilon, 197
Leptochloa, 29
Lespedeza, 118
Liliaceae, 58
Lilium, 60
Limosella, 172
Linaceae, 121
Linaria, 170
Linum, 121
Lithospermum, 157
Loasaceae, 136
Lobelia, 182
Lolium, 36
Lomatium, 142
Lonicera, 180
Lophotocarpus, 10
Lotus, 114
Ludwigia, 138
Lychnis, 87
Lycium, 168
Lycopersicon, 168
Lycopus, 165
Lysimachia, 146
Lythraceae, 136
Lythrum, 137

Macrocalyx, 155
Malus, 108
Malvaceae, 131
Malva, 131
Malvastrum, 132
Marrubium, 161
Martyniaceae, 175
Martynia, 175
Medicago, 113
Meibomia, 116
Melanthaceae, 58
Melanthium, 58
Melica, 32
Melilotus, 113
Melissa, 164
Menispermaceae, 95
Menispermum, 95
Mentha, 165
Mentzelia, 136
Meriolix, 140
Mertensia, 157
Mesadenia, 207
Micrampelis, 182
Mimosaceae, 110
Mimulus, 171
Moehringia, 88
Mollugo, 85
Monarda, 163
Monniera, 171
Monocotyledons, 7
Monolepis, 81
Monotropaceae, 145
Monotropa, 145
Morongia, 110
Moraceae, 72
Morus, 73
Muhlenbergia, 22
Myosotis, 157
Myosurus, 92
Myriophyllum, 140

Nabalus, 186
Naiadaceae, 8
Naias, 9
Naumbergia, 147
Nelumbo, 89
Nepeta, 162
Nothocalais, 85
Notholaena, 5
Nothoscordum, 59
Nyctaginiaceae, 84
Nymphaeaceae, 89

Oenothera, 139
Oleaceae, 148
Onagraceae, 138
Onoclea, 3
Onosmodium, 158
Ophioglossaceae, 1
Ophioglossum, 1
Opulaster, 104
Opuntia, 136
Orchidaceae, 64
Orchis, 65
Ornithogalum, 60
Orobanchaceae, 174
Osmundaceae, 2
Osmunda, 2
Ostrya, 69
Oxalidaceae, 120
Oxalis, 120
Oxygraphis, 94

Panax, 141
Panicularia, 34
Panicum, 17
Papaveraceae, 95
Papilionaceae, 111
Parietaria, 74
Parosela, 115
Parsonsia, 137
Parthenium, 199
Parthenocissus, 130
Paspalum, 16
Pastinaca, 142
Pedicularis, 174
Pellaea, 5
Pentstemon, 170
Penthorum, 103
Perilla, 166
Petalostemon, 115
Phalaris, 21
Philotria, 11
Phleum, 24
Phlox, 154
Phragmites, 29
Phrymaceae, 176
Phryma, 176
Phyla, 159
Physalis, 166
Physalodes, 166
Physostegia, 162
Phytolaccaceae, 84
Phytolacca, 84
Pinaceae, 7
Plantaginaceae, 177
Plantago, 177
Platanaceae, 103
Platanus, 104
Poa, 33
Podophyllum, 94
Pogonia, 65
Polanisia, 102
Polemoniaceae, 154
Polemonium, 155
Polygalaceae, 122
Polygala, 122
Polygonaceae, 75
Polygonum, 77
Polymnia, 198
Polypodiaceae, 2
Polystichum, 3
Polytaenia, 142
Pomaceae, 107
Pontederiaceae, 56
Pontederia, 56
Populus, 68
Portulacaceae, 85
Portulaca, 85
Potamogeton, 8
Potentilla, 105
Primulaceae, 146
Prionopsis, 192
Prunella, 162
Prunus, 109
Psoralea, 114
Pteridophyta, 1
Ptilimnium, 145

Quamasia, 60
Quamoclit, 152
Quercus, 70

Ranunculaceae, 90
Ranunculus, 92
Ratibida, 200
Rhamnaceae, 129
Rhamnus, 129
Rhus, 126
Ribes, 103
Ricinus, 124
Robinia, 115
Roripa, 99
Rosaceae, 104
Rosa, 107
Rotala, 137
Rubiaceae, 178
Rubus, 104
Rudbeckia, 199
Ruellia, 176
Rumex, 75
Rutaceae, 122

Sabbatia, 148
Sagittaria, 10
Salicaceae, 67
Salix, 68
Salomonia, 61
Salsola, 82
Salvia, 163
Salviniaceae, 5
Sambucus, 179
Sanguinaria, 95
Sanicula, 143
Santalaceae, 74
Saponaria, 87
Saxifragaceae, 103
Schedonnardus, 28
Scirpus, 43
Scleria, 45
Scrophulariaceae, 169
Scrophularia, 170
Scutellaria, 161
Sedum, 103
Senecio, 207
Sicyos, 181
Sida, 132
Sieglingia, 29
Silene, 87
Silphium, 198
Simarubaceae, 122
Sinapis, 98
Sisymbrium, 97
Sisyrinchium, 64
Sitilias, 185

Sium, 144
Smilaceae, 62
Smilax, 62
Solanaceae, 166
Solanum, 168
Solidago, 192
Sonchus, 184
Sophia, 101
Sorghastrum, 15
Sorghum, 15
Sparganiaceae, 8
Sparganium, 8
Spartina, 28
Specularia, 182
Spergula, 89
Spermatophyta, 7
Spiraea, 104
Spirodela, 54
Sporobolus, 24
Stachys, 163
Staphyleaceae, 127
Staphylea, 127
Steironema, 146
Stenophyllus, 43
Stipa, 22
Strophostyles, 120
Symphoricarpus, 180
Symphytum, 158
Syndesmon, 92
Syntherisma, 16

Taenidia, 143
Talinum, 85
Tanacetum, 206
Taraxacum, 184
Tecoma, 175
Teucrium, 160
Thalesia, 175
Thalictrum, 94
Thaspium, 142
Thelesperma, 204
Thlaspi, 97
Tiliaceae, 131
Tilia, 131
Toxylon, 73
Tradescantia, 56
Tragia, 124
Tragopogon, 184
Trifolium, 113
Trillium, 62
Triosteum, 180
Tripsacum, 14
Trisetum, 27
Typhaceae, 7
Typha, 8

Ulmaceae, 71
Ulmus, 72
Umbelliferae, 141
Uniola, 32
Urticaceae, 73
Urtica, 74
Urticastrum, 74
Utricularia, 174
Uvularia, 59

Vaccaria, 87
Vagnera, 61
Valerianaceae, 181
Valerianella, 181
Vallisneriaceae, 11
Verbascum, 170
Verbenaceae, 158
Verbena, 158
Verbesina, 202
Vernonia, 190
Veronica, 172
Viburnum, 180
Vicia, 119
Violaceae, 134
Viola, 135
Vitaceae, 130
Vitis, 130

Washingtonia, 144
Wolffia, 55
Woodsia, 3

Xanthium, 187
Xanthoxylum, 122

Zizania, 20
Zizia, 144
Zygophyllaceae, 121

# INDEX OF ENGLISH NAMES.


Adam-and-Eve, 66
Adder's-tongue, 1
Agrimony, 107
Alexanders, Golden, 142
Alfalfa, 113
Alsike clover, 114
Alum-root, 103
Anemone, 91
  False Rue, 91
  Rue, 97
Apple, May, 94
Apple-of-Peru, 166
Arrow-head, 10
  False, 10
Ash, Green, 148
  Prickly, 122
  Red, 148
  White, 148
Asparagus, 61
Aster, 195
  Swamp, 194
Avens, Rough, 106
  Spring, 106
  White, 106

Balm, Garden, 164
Balsam-apple, Wild, 182
Barley, Wild, 37
Barnyard Grass, 17
Basswood, 131
Bastard Toad-flax, 75
Beaked Hazel-nut, 70
Bean, Castor,124
  Wild, 120
Beard-tongue, 170
Beauty, Spring, 85
Bedstraw, Fragrant, 179
  Marsh, 179
  Wood, 179
Beggar Ticks, 203
Bell-flower, 182
Bells, Blue, 157
Bellwort, 59
Bent-grass, 27
Bergamot, Wild, 163
Bernard's Violet, 135
Bet, Bouncing, 87
Big Bur-reed, 8
Bindweed, 153
  Small, 153
Bishop-weed, Mock, 145
Bitter Cress, 99
  Dock, 76
Bittersweet, 127, 168
Black-berry Lily, 64
  Wild, 105
Black Haw, 180
  Jack Oak, 71
  Locust, 115
  Mustard, 98
  Nightshade, 168
  Oak, 71
  Sugar Maple, 128
  Sumac, 126
  Willow, 68
Bladder-nut, 128
  -wort, 174
Blazing Star, 191
Blood-root, 95
Blue-bells, 157
  -bottle, 208
  Cohosh, 94
  -eyed Grass, 64
  -eyed Mary, 170
  -flag, 63
  -grass, Kentucky, 34
Bluets, 178
Blue-weed, 158
Bog Fern, 4
Boneset, 191
  False, 191
Bottle-brush Grass, 38
Bouncing Bet, 87
Bower, Virgin's, 92
Box Elder, 128
  Rattle, 113
Brake, Cliff, 5
  Powdery Cliff, 5
Breeches, Dutchman's, 96
Broomgrass, 15
Broomrape, 175
Buckberry, 180
  -bush, 180
  -eye, 128
  -thorn, 129
  -wheat, 77
    Climbing, 79
Buffalo Bur, 168
Bugle-weed, 165
Bug-seed, 82
Bulrush, 43
Bunch-flower, 58
Bur, Buffalo, 168
  Cockle, 187
  -cucumber, One-seeded, 181
  -dock, 208
  -grass, 20
  -head, 10
  -marigold, 203
Burning Bush, 127
Bur-oak, 71
  -reed, Big, 8

Bur-reed Slender, 8
Bush, Burning, 127
Button, 178
Clover, 118
Skunk, 127
Butter-and-Eggs, 170
Butter-cup, 92
Butterfly-weed, 150
Butterweed, 207
Buttonbush, 178
Snake-root, 143
-weed, 178

Caltrop, 121
Camomile, Field, 205
Campion, Starry, 87
White, 87
Canada Lily, 60
Thistle, 208
Canary-grass, 21
Reed, 21
Southern, 21
Cardinal flower, 183
Carpet-weed, 85
Carrion-flower, 62
Carrot, Wild, 142
Castor Bean, 124
Catalpa, 175
Catch-fly, Night-flowering, 87
Sleepy, 87
Catnip, 162
Cat-tail, 8
Cedar, red, 7
Centaury, western, 148
Chaff Weed, 147
Chaffy Fern, 3
Charlock, 98
Cheeses, 131
Cherry, Ground, 166
Wild, 109
Chervil, 143
Chestnut, Horse, 128
Oak, 71
Chess, 35, 36
False, 36
Field, 36
Soft, 36
Wild, 36
Grayish, 36
Chickweed, 88
Forked, 89
Chicory, 184
Chinquapin Oak, 71
Water Lily, 89
Christmas Fern, 3
Cicely, Sweet, 144
Cinquefoil, 105
City Pigweed, 80
Clammy-weed, 102
Clearweed, 74
Cleavers, 179
Clematis, 92
Cliff-brake, 5
Powdery, 5
Climbing Buckwheat, 79
Climbing Milkweed, 152
Clover, 113
Alsike, 113
Bush, 118
Prairie, 115
Red, 113
Sour, 120
Sweet, 113
White, 114
Cockle-bur, 187
Corn, 87
Cohosh, Blue, 94
Coffee Senna, 111
-tree, Kentucky, 111
Columbine, 91
Comfrey, 158
Common Milkweed, 151
Scouring Grass, 6
Thistle, 208
Vetch, 119
Compass Plant, 199
Cone-flower, 199, 200
Purple, 200
Cork Elm, 72
Corn Cockle, 87
-field Morning Glory, 153
Gromwell, 157
Indian, 96
Salad, 181
Speedwell, 173
Cotton-wood, 68
Couch-grass, 37
Cow-herb, 88
Crab-apple, Wild, 108
-grass, 17
Slender, 16
Smooth, 17
Crane's-bill, 120
Creeper, Virginia, 130
Creeping Pigweed, 83
Cress, Bitter, 99
Penny, 97
Rock, 101
Water, 99
Winter, 98
Yellow Water, 99
Crisped Mallow, 132
Crowfoot, 92
White Water, 93
Yellow-water, 93
Crownbeard, 202
Culver's-root, 173
Cup-leaf, 198
-plant, 199
Curled-dock, 76
Cut Grass, 20

Daisy, Ox-eye, 205
Dandelion, 184
False, 185
Day-flower, 55
-lily, 59
Dewberry, 105
Ditch Stone-crop, 103
Dock, Bitter, 76

Dock, Curled, 76
Patience, 76
Prairie, 199
River, 76
Swamp, 76
Tall, 76
White, 76
Dodder, 153
Dogbane, 149
-fennel, 205
-tooth violet, 60
-wood, 145
Dotted Millet, 16
Downy Grape, 130
Dragon, Green, 54
-head, False, 162
Dropseed Grass, 24
Duck-weed, 54
Dutchman's Breeches, 96

Ebony Spleenwort, 5
Elecampane, 198
Elder-berry, 180
Box, 128
Marsh, 186
Elephant's-foot, 191
Elm, Cork, 72
Slippery, 72
White, 72
Enchanter's Nightshade, 140
Evening Primose, White, 140
Yellow, 139, 140
Everlasting, 197, 198

False Arrowhead, 10
Boneset, 191
Chess, 36
Dandelion, 185
Dragon-head, 162
Flax, 100
Garlic, 60
Grape, 130
Gromwell, 158
Indigo, 114
Nettle, 74
Oats, 27
Penny-royal, 160
False Pimpernel, 172
Rue-anemone, 91
Sensitive Plant, 110
Solomon's Seal, 61
Sun-flower, 199
Feather Geranium, 81
Fennel, 143
Dog, 205
-leaved Parsley, 142
Fern, Bog, 4
Chaffy, 3
Christmas, 3
Flowering, 2
Grape, 2
Lady, 4
Maiden-hair, 5
Rattle-snake, 1
Sensitive, 3
Fern, Walking, 4
Wood, 3
Fescue Grass, 35
Meadow, 35
Fetid Marigold, 205
Feverwort, 180
Field Camomile, 205
Chess, 36
Figwort, 170
Fireweed, 207
Five-finger, 106
Flag, Blue, 63
Sweet, 54
Flame-flower, 85
Flax, 121
Bastard Toad, 75
False, 100
Fleabane, 197
Flower, Bunch, 58
Bell, 182
Day, 55
Flame, 85
Monkey, 171
Flowering Fern, 2
Flower-of-an-hour, 132
Fog-fruit, 159
Forget-me-not, 157
Forked Chickweed, 89
Foxglove, Yellow, 173
Foxtail Grass, 20
Green, 20
Marsh, 24
Yellow, 20
Fragrant Bedstraw, 179
Sumac, 127
Frost Grape, 130
Weed, 134

Gama Grass, 15
Garden Balm, 164
Garlic, False, 60
Gentian, 149
Geranium, Feather, 81
Wild, 120
Ghost Plant, 146
Giant Hyssop, 161
Ginger, Wild, 75
Ginseng, 140
Golden Alexanders, 142
Rod, 192
Seal, 90
Gooseberry, Wild, 103
Goose-grass, 179
-plum, 109
Grape, Downy, 130
False, 130
-fern, 2
Frost, 130
June, 130
Summer, 130
Grass, Barnyard, 17
Bent, 27
Blue-eyed, 64
Bottle-brush, 38
Broom, 15

Grass, Bur, 20
Canary, 21
Couch, 37
Cut, 20
Dropseed, 24
Fescue, 35
Foxtail, 20
Gama, 15
Goose, 179
Green Foxtail, 20
Hair, 26
Hungarian, 20
Indian, 15
Johnson, 16
Kentucky Blue, 34
Long-awned wood, 24
Manna, 34
Marsh, 28
Foxtail, 24
Meadow, 33, 34
Fescue, 35
Melic, 32
Mesquite, 28
Orchard, 33
Panic, 17
Pepper, 97
Porcupine, 22
Rattle-snake, 29
Red-top, 26
Reed, 26, 27, 29
Reed Canary, 21
Rough Meadow, 34
Rush, 24
Rye, 36
Sand, 30
Southern Canary, 21
Spear, 33
Spear, 33
Spike, 32, 33
Squirrel-tail, 38
Star, 62
Tall Red-top, 29
Three Awned, 22
Thin, 26
Timothy, 24
Velvet, 27
Vernal, 21
Whitlow, 100
Wire, 33
Witch, 19
Wood, 34
Wood Reed, 26
Yard, 29
Yellow Foxtail, 20
Green Ash, 148
-brier, 62
Dragon, 54
Foxtail Grass, 20
Milkweed, 151
Violet, 135
Gromwell, Corn, 157
False, 158
Wood, 157
Ground Cherry, 166
Ivy, 162
Ground Nut, 119
Plum, 116
Gum-plant, 192
Hackberry, 72
Hair Grass, 26
Hairy Spiderwort, 56
Violet, 135
Haw, Black, 180
Red, 108
Hawkweed, Prairie, 186
Hazel-nut, 69
Hedge-hyssop, 172
-mustard, 97
-nettle, 163
Hemlock, Water, 144
Hemp, 73
Water, 83
Henbit, 163
Herb, Willow, 139
Hickory, Shell-bark, 67
High Mallow, 131
Hoarhound, Water, 165
White, 161
Hoary Puccoon, 157
Hog Peanut, 119
Plum, 109
Weed, 187
Honewort, 145
Honey Locust, 111
Plant, 102
-suckle, 180
Wild, 91
Hop, 73
Medic, 113
Hornwort, 89
Horse Chestnut, 128
-nettle, 168
Horse-nettle, White, 168
Radish, 99
-tail, 6
-weed, 187, 197
Low, 197
Hound's-tongue, 156
Hungarian Grass, 20
Hyacinth, Wild, 60
Hyssop, Giant, 161
Hedge, 172
Water, 171

Indian Corn, 96
Grass, 15
Plantain, 207
Pipe, 146
Strawberry, 105
Tobacco, 183, 197
Indigo, False, 114
Wild, 112
Iron-weed, 190
-wood, 69
Ivy, Ground, 162
Poison, 127

Jack-in-the-Pulpit, 54
Jacob's Ladder, 155
Japanese Morning-glory, 153

Jimpson-weed, 169
Joe-pye Weed, 191
Johnson Grass, 16
June Grape, 130

Kentucky Blue-grass, 34
Coffee-tree, 111
King-nut, 67
Knot-weed, 77

Ladder, Jacob's, 155
Ladies' Slipper, 64
Tresses, 65
Lady-cigar Tree, 175
Fern, 4
Larkspur, 91
Lead-plant, 115
Leaf-cup, 198
Stick, 136
Velvet, 132
Water, 155
Lemon Mint, 164
Lettuce, Prickly, 185
White, 186
Wild, 184
Lily, Blackberry, 64
Canada, 60
Chinqueqin Water, 89
Day, 59
March, 60
Turk's-cap, 60
Liquorice, Wild, 116, 179
Locust, Black, 115
Honey, 111
Log Orchid, Nodding, 65
Looking-glass, Venus', 182
Loose-strife, 137
Tufted, 147
Yellow, 146
Lopseed, 177
Lousewort, 174
Low Horseweed, 197
Senna, 111
Thistle, 208
Willow, 69

Maiden-hair Fern, 5
Mallow, Crisped, 131
High, 131
Poppy, 132
Prickly, 132
Rose, 132
Yellow, 132
Manna Grass, 34
Man-of-the-Earth, 152
Maple, Black Sugar, 128
-leaved Pig-weed, 81
Sugar, 128
White, 128
March Lily, 60
Marigold, Bur, 203
Fetid, 205
Marsh Bedstraw, 179
Elder, 186
Fox-tail Grass, 24

Marsh Purslane, 138
Grass, 28
Mary, Blue-eyed, 171
Matrimony Vine, 169
May Apple, 94
Meadow, Fescue Grass, 35
Grass, 33, 34
Rough, 34
Parsley, 144
Parsnip, 142
Rue, 94
-sweet, 104
Medic, Hop, 113
Toothed, 113
Melic Grass, 32
Mercury, Three-seeded, 123
Mesquite Grass, 28
Mexican Tea, 81
Milfoil, 205
Water, 141
Milk Vetch, 115
-weed, 150
Climbing, 152
Common, 151
Green, 151
Prairie, 151
Purple, 150
Swamp, 150
-wort, 122
Millet, 19, 20
Dotted, 16
Mint, Lemon, 164
Mountain, 164
Wild, 165
Wood, 164
Woolly, 165
Missouri Violet, 135
Mock Bishop-weed, 145
Mocker-nut, 67
Moneywort, 146
Monkey-flower, 171
Moonseed, 95
Morning-glory, 152
Corn-field, 153
Japanese, 153
Purple, 152
Red, 152
Swamp, 152
Motherwort, 162
Moth Mullen, 170
Mountain Mint, 164
Mousetail, 92
Mud-plantain, 57
Smaller, 57
Mudweed, 199
Mudwort, 172
Mulberry, 73
Mullen, 170
Moth, 170
Mustard, Black, 98
Hedge, 97
Tall, 98
Tansy, 101
Treacle, 102
White, 98

Narrow-leaved Pigweed, 80
Neckweed, 173
Needles, Spanish, 204
Nettle, False, 74
Hedge, 163
Horse, 168
White, 168
Slender, 74
Wood, 74
New Jersey Tea, 129
Nigger-head, 200
Night-flowering Catch-fly, 87
Night-shade, Black, 168
Enchanter's, 140
Nimble-will, 23
Ninebark, 104
Nodding Log Orchid, 65
Nut, Ground, 119
Hazel, 69
King, 67
Mocker, 67
Pig, 67
Rush, 45

Oak, Black, 71
Jack, 71
Bur, 71
Chestnut, 71
Chinquapin, 71
Post, 71
Red, 70
Shingle, 71
Swamp White, 71
Texas Red, 70
White, 71
Oats, 28
False, 27
Obedient Plant, 162
One-seeded Bur-cucumber, 181
Onion, Wild, 59
Orache, Spreading, 82
Orange, Osage, 73
Orchard Grass, 33
Orchid, Nodding Log, 65
Orchis, Prairie, 65
Showy, 65
Osage Orange, 73
Ox-eye Daisy, 205
Oyster Plant, 184

Panic Grass, 17
Pansy, Wild, 135
Papaw, 90
Parsley, Fennel-leaved, 142
Meadow, 144
Prairie, 142
Parsnip, Meadow, 142
Wild, 142
Partridge Pea, 111
Patience Dock, 76
Peach, 109
Peanut, Hog, 119
Pea, Partridge, 111
Pear, Prickly, 136
Pecan, 67
Pellitory, 74
Penny-cress, 97
-royal, 164
False, 160
Spring, 164
Pepper-grass, 97
-mint, 165
-root, 100
Persimmon, 147
Petunia, Wild, 176
Phlox, Wild, 154
Pickerel-weed, 56
Pignut, 67
Pigweed, 80
City, 80
Creeping, 83
Maple-leaved, 81
Narrow-leaved, 80
Prairie, 80.
Rough, 83
Slender, 83
Spiny, 83
Spreading, 81
Winged, 81
Wood, 80
Woolly, 84
Pimpernel, False, 172
Yellow, 143
Pink, Prairie, 148
Pinweed, 134
Pipe, Indian, 146
Plantain, 177
Indian, 207
Mud, 57
Smaller Mud, 57
Plant, Compass, 190
Cup, 199
Ghost, 146
Gum, 192
Honey, 102
Lead, 115
Obedient, 162
Oyster, 184
Unicorn, 176
Plum, Goose, 109
Ground, 116
Hog, 109
Wild, 109
Poison Ivy, 127
Poke-berry, 84
Pond-weed, 8
Poor-man's Weather-glass, 147
Poplar, Silver-leaf, 68
Poppy Mallow, 132
Prickly, 95
Porcupine Grass, 22
Portulaca, 85
Post-oak, 71
Powdery Cliff-brake, 5
Prairie Clover, 115
Dock, 199
Hawkweed, 186
Milkweed, 151
Orchis, 65
Parsley, 142

Prairie Pigweed, 80
Pink, 148
Rose, 107
Trefoil, 114
Turnip, 114
Violet, 135
Prickly Ash, 122
Lettuce, 185
Mallow, 132
Pear, 136
Poppy, 95
Sensitive Plant, 110
Puccoon, 157
Hoary, 157
Pumpkin, Wild, 181
Purple Cone-flower, 200
Purple Milkweed, 150
Morning-glory, 152
Rocket, 99
Purse, Shepherd's, 100
Purslane, Marsh, 138
Water, 137
Pussley, 85

Quillwort, 7

Radish, Horse, 99
Ragweed, 187
Southern, 187
Western, 187
Rape, 98
Broom, 175
Raspberry, Wild, 105
Rattle-box, 113
Rattle-snake Fern, 1
Grass, 29
Red Ash, 148
Bud, 110
Cedar, 7
Clover, 113
Haw, 108
Morning-glory, 152
Oak, 70
-top Grass, 26
Tall, 29
Reed Canary Grass, 21
Grass, 26, 27, 29
Wood, 26
Rice, Wild, 20
River-dock, 76
-weed, 171
Rock-Cress, 101
Rocket, Purple, 99
Root, Alum, 103
Culver's, 173
Rose Mallow, 132
Prairie, 107
Wild, 107
Rosin-weed, 199
Rough Avens, 106
Meadow Grass, 34
Pigweed, 83
Rue Anemone, 91
False, 91
Meadow, 94
Rush, 57
Bul-, 43
Grass, 24
Nut, 45
Spike, 42
Russian Thistle, 82
Rye Grass, 36
Wild, 38

Sage, Wild, 163
Wood, 160
Salad, Corn, 181
Sand-bar Willow, 69
-grass, 30
-wort, 88
Sanicle, 143
Scouring-rush, Common, 6
Slender, 6
Stout, 6
Seal, False Solomon's, 61
Golden, 90
Solomon's, 61
Sedge, 45
Self-heal, 162
Senna, Coffee, 111
Low, 111
Wild, 111
Sensitive Fern, 3
-plant, False, 110
Prickly, 110
Service-berry, 108
Sheep Sorrel, 76
Shell-bark Hickory, 67
Shepherd's Purse, 100
Shingle Oak, 71
Shooting Star, 147
Showy Orchis, 65
Silver-leaf Poplar, 68
Silver Maple, 128
Silvery Spurge, 123
Skullcap, 161
Skunk Bush, 127
Sleepy Catchfly, 87
Slender Bur-reed, 8
Crab-grass, 16
Nettle, 74
Pigweed, 83
Scouring-rush, 6
Slipper, Ladies', 64
Slippery Elm, 72
Small Bindweed, 153
Smaller Mud-plantain, 57
Small Spleenwort, 4
Smart-weed, 77
Smooth Crab-grass, 17
Spiderwort, 56
Sumac, 127
Snake-root, Button, 143
Virginia, 75
White, 191
Sneezeweed, 204
Spike Rush, 42
Soft Chess, 36
Solomon's Seal, 61
False, 61

Sorrel, Sheep, 76
Wood, 120
Sour Clover, 120
Southern Canary-grass, 21
Rag-weed, 187
Spear-grass, 33
Sowbane, 81
Sow Thistle, 184
Spanish Needles, 204
Spear Grass, 33
Spearmint, 165
Speedwell, Corn, 173
Water, 172
Spiderwort, Hairy, 56
Smooth, 56
Western, 56
Spike Grass, 32-33
Rush, 42
Spiny Pigweed, 83
Spleenwort, Ebony, 5
Small, 4
Tall, 4
Spreading Orache, 82
Pigweed, 81
Avens, 106
Spring Beauty, 85
Penny-royal, 164
Spurge, 124
Silvery, 123
Stinging, 124
Spurry, 89
Squaw-weed, 207
Squirrel-tail Grass, 38
Star, Blazing, 191
Grass, 62
Water, 57
-of-Bethlehem, 61
Starry Campion, 87
Star, Shooting, 147
Thistle, 208
Starwort, Water, 126
Stick-leaf, 136
-seed, 156
-tight, 116
Stinging Spurge, 124
St. John's-Wort, 133
Stone-crop, Ditch, 103
Stout Scouring-rush, 6
Strawberry, Indian, 105
Wild, 105
Sugar Maple, 128
Black, 128
Sumac, Black, 126
Fragrant, 127
Smooth, 127
Summer Grape, 130
Sun-flower, 201
False, 199
Tickseed, 203
Swamp Aster, 194
Dock, 76
Milkweed, 150
Morning-glory, 152
Swamp Violet, 136
White Oak, 71
Sweet Brier, 107
Cicely, 144
Clover, 113
Flag, 54
Meadow, 104
William, Wild, 154
Sycamore, 104

Tall Dock, 76
Mustard, 98
Red-top Grass, 29
Spleenwort, 4
Thistle, 208
Tansy, 206
Mustard, 101
Tarweed, 138
Tea, Mexican, 81
New Jersey, 129
Tearthumb, 79
Texas Red Oak, 70
Thin Grass, 26
Thistle, Canada, 208
Common, 208
Low, 208
Russian, 82
Sow, 184
Star, 208
Tall, 208
Thoroughwort, 191
Three-awned Grass, 22
Three-seeded mercury, 123
Ticks, Beggar, 203
Tickseed, 202
Sun-flower, 203
Timothy Grass, 24
Toad-flax, Bastard, 75
Tobacco, Indian, 183, 197
Tomato, 168
Tongue, Beard, 170
Hound's, 156
Toothed Medic, 113
Touch-me-not, 129
Treacle Mustard, 102
Tree, Lady-cigar, 175
of Heaven, 122
Trefoil, Prairie, 114
Tresses, Ladies', 65
Trumpet Vine, 175
Tufted Loosestrife, 147
Tumble-weed, 83
Turk's-cap Lily, 60
Turnip, 98
Prairie, 114
Turtle-head, 170

Umbrella-wort, 84
Unicorn Plant, 176

Velvet-grass, 27
-leaf, 132
Venus' Looking-glass, 182
Verbena, Wild, 159
Vernal-grass, 21
Vervain, 158
Vetch, 119

Vetch, Common, 119
Milk, 115
Wild, 119
Vine, Matrimony, 169
Trumpet, 175
Violet, Bernard's, 135
Dog-tooth, 60
Green, 136
Hairy, 135
Missouri, 135
Swamp, 136
Wood, 135
Yellow, 135
Virginia Creeper, 130
Snake-root, 75
Virgin's Bower, 92

Wake-robin, 62
Walking Fern, 4
Wall-flower, Western, 102
Walnut, 66
Water Cress, 99
Yellow, 99
Crow-foot, 93
White, 93
Yellow, 93
Hemlock, 144
Hemp, 83
Hoarhound, 165
Hyssop, 171
-leaf, 155
-lily, Chinquapin, 89
-milfoil, 141
-plantain, 10
-purslane, 137
Speedwell, 172
Star-grass, 57
Starwort, 126
-weed, 11
Willow, 176
-wort, 133
Weather-glass, Poor-man's, 147
Weed, Blue, 158
Bugle, 165
Butterfly, 150
Carpet, 85
Clammy, 102
Duck, 54
Hog, 187
Jimpson, 169
Joe-pye, 191
Mud, 199
Neck, 173
Pickerel, 56
Pig, 80
River, 171
Tar, 138
Tumble, 83
Western Centaury, 148
Ragweed, 187
Spiderwort, 56
Wall-flower, 102
White Ash, 148
Avens, 106
Campion, 87
White Clover, 113
Dock, 76
Elm, 72
Evening Primrose, 140
Hoarhound, 161
Horse Nettle, 168
Lettuce, 186
Maple, 128
Milkweed, 151
Mustard, 98
Oak, 71
Swamp, 71
Snakeroot, 191
Water Crowfoot, 93
Willow, 68
Whitlow-grass, 100
Widow's-cross, 103
Wild Balsam-apple, 182
Barley, 37
Bean, 120
Bergamot, 163
Blackberry, 105
Carrot, 142
Cherry, 109
Chess, 36
Crab-apple, 108
Geranium, 120
Ginger, 75
Gooseberry, 103
Honeysuckle, 91
Hyacinth, 60
Indigo, 112
Lettuce, 184
Liquorice, 116, 179
Mint, 165
Onion, 59
Pansy, 135
Parsnip, 142
Petunia, 176
Phlox, 154
Plum, 109
Pumpkin, 181
Raspberry, 105
Rice, 20
Rose, 107
Rye, 38
Sage, 163
Senna, 111
Strawberry, 105
Sweet William, 154
Verbena, 159
Vetch, 119
Yam, 63
Will, Nimble, 23
Willow, 68
Black, 68
-herb, 139
Low, 69
Sand-bar, 69
Water, 176
White, 68
Winged Pig-weed, 81
Winter Cress, 98
Wire Grass, 33
Witch Grass, 19

Wood Bedstraw, 179
Fern, 3
Grass, 34
Long-awned, 24
Gromwell, 157
Iron, 69
Mint, 164
Nettle, 74
Pig-weed, 80
Reed-grass, 26
Sage, 160
Sorrel, 120
Violet, 135
Woolly Mint, 165
Pigweed, 84
Wormseed, 81
Wormwood, 206

Yam, Wild, 63
Yard-grass, 29
Yarrow, 205
Yellow Evening Primrose, 139, 140
Fox-glove, 173
Fox-tail Grass, 20
Loosestrife, 146
Mallow, 132
Yellow Pimpernel, 143
Violet, 135
Water Cress, 99
Crowfoot, 93
Weed, 192

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